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OPERATIONS AND MAINTENANCE COSTS FOR NEW MAJOR U.S. COAST GUARD PLATFORMS: PROJECTED VERSUS ACTUAL COSTS

by

John Ewen Frost

June 1989

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This thesis examines the accuracy of the operations and maintenance budget models developed for new U.S. Coast Guard cutters and aircraft as part of life cycle cost analysis prior to acquisition. The HU-25A medium range search aircraft and HH-65A short range recovery aircraft were used along with the 270 foot medium endurance cutter and the 110 foot patrol boat. A regression method of estimating these costs using historical costs was explored as an alternative to the laborious task of identifying each major cost element. The results indicated that the budget models are poor predictors and that parametric methods may provide more accuracy. Additional research in developing cost estimating relationships for this purpose is needed.

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by

John Ewen Frost
Lieutenant, United States Coast Guard
B.S.C.E., United States Coast Guard Academy, 1979

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCEINCE IN MANAGEMENT

from the

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ABSTRACT

This thesis examines the accuracy of the operations and maintenance budget models developed for new U.S. Coast Guard cutters and aircraft as part of life cycle cost analysis prior to acquisition. The HU-25A medium range search aircraft and HH-65A short range recovery aircraft were used along with the 270 foot medium endurance cutter and the 110 foot patrol boat. A regression method of estimating these costs using historical costs was explored as an alternative to the laborious task of identifying each major cost element. The results indicated that the budget models are poor predictors and that parametric methods may provide more accuracy. Additional research in developing cost estimating relationships for this purpose is needed.

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I. INTRODUCTION

A. OVERVIEW

The United States Coast Guard is by far the smallest of the nation´s armed forces, with a total active duty strength of about 38,000 and an annual budget of $3.43 billion, as requested for fiscal year 1990 (H.R. Doc No 101-4, 1989, p.I-R33). The Coast Guard has never been a "big ticket item" in the federal budget. It has repeatedly had to fight for its survival since its creation in 1790. Over the years it has learned to make do with used equipment, ships, and shore facilities and has worked to get the most out of every dollar appropriated. Frequently, when the federal government has faced austere financial situations, the Coast Guard has been among those agencies considered for civilianization, dismemberment to other agencies, or total elimination. Often what has saved the service is its ability to stretch a dollar over more missions than anyone else. Indeed, this is a part of the service´s continuing budget strategy, called the multi-mission concept (Bragaw, 1980, p.6).

The present federal deficit reduction mood in the executive and legislative branches once again poses a challenge to the Coast Guard´s existence. Efficiency and effectiveness will continue to be the keys to budgetary survival. The lion´s share of the Coast Guard´s total funding in a given fiscal year comes from the Operating Expenses Appropriation. It is from this appropriation that the basic necessities of operations are paid. Operations and maintenance (O & M) costs for all the aircraft, cutters, and boats (collectively referred to as platforms) used by the service are paid out of the Operating Expenses (OE) Appropriation. While these costs can be reduced to some degree during federal budget crunches, doing so over a prolonged period of time can permanently affect how those platforms perform. Platform life can be shorted through too little maintenance. Crew safety can be adversely affected. Needed on the job training and experience will decrease. For these reasons and others, the Coast Guard looks to acquire platforms that will keep O & M costs low.

Evaluation of O & M costs for new platforms is part of the life cycle cost analysis done during the initial acquisition planning phase. When several new platforms are being considered to fill a mission need, their acquisition costs can often be very similar. How much they will cost to operate over a 20 to 30 year operating life or longer can be the deciding factor in choosing the platform to be procured. The accuracy of the life cycle cost estimates is obviously crucial.

B. RESEARCH OBJECTIVES AND QUESTIONS

The objectives of this thesis are to review the accuracy of Coast Guard O & M cost estimation for new platforms and to attempt to apply parametric (regression) methods to that process. Because these estimates affect acquisition decisions as well as the structure of the OE and Acquisition, Construction, & Improvements (AC&I) appropriation requests for many years into the future, their accuracy in the foreseeable tight budget climate is very important. Examination of an alternative estimation method may identify a more effective way of attaining accurate estimates and facilitate informed decision making. The two primary research questions that guided this thesis were as follows:

- How well do the Operations and Maintenance budget models developed as part of the life cycle cost analysis for a new platform predict actual O & M costs?
- Can parametric methods of estimation be developed to predict O & M costs better?

These questions lead to several secondary questions which were:

- Are there significant variations between the O & M budget model predictions and actual O & M costs?
- What cost areas showed these variations?
- What caused the variations?
- Could the budget model have made better predictions?
- What variables are used in the budget model to predict costs?
- Are there better predictor variables that can be used in a regression generated budget model?

C. SCOPE, ASSUMPTIONS, AND LIMITATIONS

The budget models for platforms recently acquired by the Coast Guard were examined in order to answer the research questions. These acquisitions were chosen because they are most likely to reflect current methods of analysis as well as current budget procedures. Also, the required planning and budget documents as well as cost data would still be easily obtainable.

To better illustrate the estimating ability presently available, emphasis was placed on the O & M cost estimations done prior to acceptance of the platform for operations. Estimates made after platforms commenced operations would have the advantage of actual service-generated operating data for use in making revisions. Also, once an operating budget base is developed for a platform, incremental budgeting becomes the common practice instead of using budget models.

Two aircraft and two cutter procurements which have occurred since 1979 were selected for analysis. The aircraft programs used were the Medium Range Search (MRS) aircraft and the Short Range Recovery (SRR) aircraft. The cutter programs used were for Medium Endurance Cutters (WMEC) and Patrol Boats (WPB). A brief program background for each platform is provided later.

Several assumptions have been made to conduct this analysis. The programs chosen are assumed to be typical of the major acquisitions process used by the service. Budget models were accepted as they were presented in the documentation reviewed. Their formulation was not questioned. Costs were assumed to be accurately charged to the appropriate platform type and the correct operating guide. These assumptions are reasonable and facilitated the analysis.

Some limitations were encountered in this research. Complete cost data were not available for each platform for every year of operation. Making statistical inferences from small samples is more difficult than from larger ones because there is more of a possibility of error. Appropriate statistical methods were used in the analysis of small samples. Still, the sample size could limit the reliability of some of the statistical analysis, particularly for the SRR and WPB programs, where only three years of actual cost data were available.

Another limitation encountered was the amount of documentation available for platform budget models. Some documents were very complete, showing all assumptions and calculations, while others only indicated total amounts. This made understanding the construction of the budget models impossible. None of the individuals who formulated these models is still in place and only one could be contacted for information. While this prevented any analysis of budget model generation, it did not hinder the analysis.

D. PLATFORM HISTORIES

The MRS program was developed to obtain a replacement aircraft for the HU-16E Albatross or "Goat", as it was affectionately called. The HU-16E was a small, amphibious, twin propeller, fixed wing aircraft used for search and rescue, law enforcement, and pollution patrols of four to six hours, though the aircraft was capable of longer missions. It was becoming a maintenance problem as well as a health hazard (noise) for the air crews. The aircraft to replace the HU-16E was to be selected from "off the shelf" aviation technology for ease in obtaining spare parts from commercial sources. A French-built corporate jet called a Guardian was selected as the replacement and was designated the HU-25A. In order to meet federal procurement standards, as well as obtain better efficiency while operating at low altitudes, an American-built engine was selected to be used in place of the engines already installed. Computerized, state of the art avionics were also a major requirement to reduce flight deck work loads and permit more attention to conduct of the mission.

The SRR program was started to replace the HH-52A Sea Guard helicopter which was used by the Coast Guard since the early 1960´s. The HH-52A was a small, single turbine, amphibious helicopter that was the work horse of the service´s aircraft for over 20 years. It was simple enough to be operated by a crew of two during daylight and was deployable aboard air-capable cutters. It had a maximum endurance of about two and a half hours, which made it ideal for coastal search and rescue as well as law enforcement operations. The airframe was getting old, as was the avionics package. The replacement aircraft was to take maximum advantage of the latest in avionics in order to reduce the pilot work load and so, improve visual search results. Also, twin engine reliability was sought. The chosen replacement was a French-built helicopter used by both industry and some European armed forces. It was designated the HH-65A and has a crew of three. It was to be equipped with American-built engines and avionics for reasons similar to those in the HU-25A procurement.

In the late 1970´s many of the Coast Guard´s fleet of larger cutters were well past the normal life expectancy of a military vessel. A group of High Endurance Cutters (WHEC)[1] of the 327 foot class had been in continuous commission since the late 1930´s.[2] For operations and budget reasons, a class of 270 foot Medium Endurance Cutters (WMEC) was selected as their replacement. A WHEC is capable of four to six weeks sustained operations without replenishment while a WMEC is capable of two to three weeks sustained operations. The 270 WMEC is designed to make maximum use of shipboard automation technology and controls to reduce required manning levels on the bridge, in the Combat Information Center (CIC) and in the engine room. The cutter is twin screw, diesel powered and equipped with a 76 millimeter Mark 75 rapid fire gun and Mark 92 fire control system, a computerized bridge, and a flight deck certified for operation of the HH-65A or the U.S. Navy Light Airborne Multi-Purpose (LAMPS) helicopter. It carries a crew of 100.

---

[1] The "W" indicates a Coast Guard vessel.

[2] Coast Guard cutter and boat classes are referred to by their length. For example, the 327 WHEC class was 327 feet long.

The fleet of 92 patrol boats (WPB), of 82 foot and 95 foot lengths, are the Coast Guard´s front line resource in coastal law enforcement and search and rescue. The 95 WPB´s were commissioned in the mid-1950´s while the 82 WPB´s were commissioned in the early 1960´s. Both classes had seen much work and were to be replaced in the late 1980´s. In the mid 70´s the 95 WPB´s were to undergo a shipyard rehabilitation to help them meet their service life. Unfortunately, many of them were found to be unrepairable for numerous reasons, the primary of which was normal wear. At this same time, drug interdiction operations in the Caribbean region were increasing and the WPB´s were a primary resource in those operations. A replacement patrol boat was needed immediately to fill the void. A proven patrol boat design from Vosper-Thornycroft was purchased and modified slightly for Coast Guard use. The 110 foot cutters were built in the U.S. and purchased in one of the fastest acquisition programs ever conducted by the service. The cutter is a twin screw, diesel powered, steel hulled boat, armed with a single 20 millimeter machine gun and two 50 caliber machine guns. They are operated by a crew of 16 with an endurance of five days without replenishment. They are intended as a short term solution, for 10 to 15 years, until a more durable and efficient patrol boat can be procured.

E. THESIS ORGANIZATION AND ABBREVIATIONS

The following chapter will describe in more detail general budget theory and the budget preparation procedures used for the Coast Guard. Chapter III outlines the methodology used to explore and analyze the research questions. Data analysis is contained in Chapter IV and is followed by conclusions and recommendations Chapter V. The appendices contain inflation rate information, copies of all research data obtained, and the computer output for all regressions run.

The following abbreviations are used throughout the text and are provided as an aid to the reader.

AC&I	Acquisition, Construction, and Improvements Appropriation
CER	Cost Estimating Relationship
CGHQ	Coast Guard Headquarters
DoD	Department of Defense
DoT	Department of Transportation
FY	Fiscal Year
LCC	Life Cycle Cost

OE	Operating Expense Appropriation
OG	Operating Guide
OG-30	Operating and Maintenance Costs account
OG-41	Aircraft Program account
OG-42	Electronics Program account
OG-45	Vessel Program account
O & M	Operations and Maintenance
RCP	Resource Change Proposal
WHEC	High Endurance Cutter
WMEC	Medium Endurance Cutter
WPB	Patrol Boat

II. BUDGET THEORY AND THE COAST GUARD BUDGET PROCESS

An understanding of budget basics and how the Coast Guard uses budgets in capital acquisitions is necessary before analysis can begin. This chapter outlines budget theory and the Coast Guard budget process.

A. BUDGET THEORY

Budgets are used by organizations to express their operating plans in a quantitative way (DeCoster, Schafer, & Ziebell, 1988, pp.12-13). They are developed in detail at lower levels of the organization and aggregated as they are forwarded to higher level decision makers. Budget projections are usually for one year in the future but any period can be used. When approved they represent management´s acceptance of responsibility for attaining the budgeted objectives. The approved budget document becomes a control tool for management to measure and evaluate operating performance.

There are several different types of budgets used. Expense budgets deal strictly with a planned level of spending for a planned level of activity. Revenue or sales budgets express target levels of revenue generation. Profit budgets combine both revenues and expenses to express target levels of profit. While the private sector uses all three types of budgets, most government agencies use only expense budgets, since no profit is expected. (Anthony, Dearden, & Bedford, 1984, pp.443-446)

In preparing an expense budget an economic analysis is conducted, based on management´s planned operating programs and anticipated activity level, to develop cost estimates. The estimates will then be used to create a budget model that reflects the expenses associated with different levels of operation. Cost estimation can be accomplished in several ways, but direct cost estimation and parametric cost estimation are the methods used most often. Direct cost estimation involves a complete review of operations and estimation of each cost element associated with each program at a projected level of activity. Direct cost estimation includes all relevant costs, both direct and indirect, as those terms are conventionally used in cost analysis and accounting. Parametric methods use statistically developed equations from historical data to predict future costs at the planned operating level.

"Direct cost estimating involves meticulous penetration into the smallest feasible portions of a work activity and the systematic and methodical assembly" of all cost elements (Stewart & Wyskida, 1987, p.224). When this is done, the results are combined in a flexible budget model which expresses estimates in terms of fixed costs that are insensitive to activity level and variable costs that change with activity level. This technique is common in organizations today. Because of the detail involved in direct cost estimating, only limited analysis of different operating variables´ effects on expenses (sensitivity analysis) is realistically possible.

Parametric estimating is becoming more widely used. As noted previously, it uses statistical methods and historical data to develop a budget model which relates cost to physical and/or performance variables associated with the project or program being estimated. The model, made up of equations called Cost Estimating Relationships (CER´s), can be developed quickly by using computers and computer data bases. The advantages of using CER´s for cost estimation are computer speed and accuracy, the use of less detailed information, and the ability to do extensive sensitivity analysis to determine the effects of different operating variables.

Private sector organizations frequently use direct cost estimation in developing their flexible budget models. Those budgets models then stay much the same from year to year, except when significant changes in operating methods or prices require the budget model to be adjusted. Government agencies often make only incremental changes in their budget requests to reflect higher price levels, with little adjustment of basic budget models for changes in operating methods or activity levels. Observation of Coast Guard procedure shows budget models are created but frequently are abandoned for the incremental approach, probably because of the political uncertainty of the government budget climate.

Budget models are used in analyses of investment projects such as capital acquisitions. When an organization is evaluating several projects for investment, decision makers often use techniques such as net present values, profitability indexes, and internal rates of return as bases for comparison. These techniques all require estimation of the cash flows associated with each project. This means that the revenues expected from the project over its entire economic life (life cycle revenues) and the costs of the project over its entire life (life cycle costs) must be estimated. Part of the life cycle cost estimation involves development of an operating budget to predict the operating costs.

Accurate estimation of operating costs from the budget created for a project can have a major impact on acceptance or rejection. This is particularly true when initial acquisition costs, disposal costs, and the lives of several projects being considered are close to each other. Both private and government organizations frequently use direct cost estimation to develop life cycle costs for projects.

The Coast Guard uses direct cost estimation for development of flexible budgets contained in the Resource Change Proposals (RCP´s) for projects under consideration. Parametric methods for life cycle cost development have not been used by the Coast Guard. (U.S. Coast Guard, Planning and Programming Manual, 1983, p.3-3)

B. THE COAST GUARD BUDGET PROCESS

To understand the importance of budgets, particularly operations and maintenance budgets in the Coast Guard, a familiarity with the budget process is necessary. This section outlines the system as described by the **Planning and Programming Manual,** Commandant Instruction M16010.1A.

The Coast Guard uses the Planning, Programming and Budgeting System (PPBS) as its process

> to determine objectives, to develop and select programs for achieving them, and finally to allocate resources among these programs in a cost effective manner. ... In sharp contrast to many traditional approaches PPBS focuses primarily on outputs. High level policy is made before budget assembly commences and the resulting budget is a statement of policy, i.e., a statement of what is to be accomplished with the resources. (U.S. Coast Guard, Planning and Programming Manual, 1983, p.1-1)

This means that the concentration is on the objectives of the Coast Guard (i.e., Search and Rescue, Enforcement of Laws and Treaties, Marine Inspection, etc.) instead of operating responsibilities like cutters, boats or aircraft. (U.S. Coast Guard, Planning and Programming Manual, 1983, Ch 1)

1. Planning

Overall management responsibility for an approved program rests with the Commandant of the Coast Guard. The Commandant, an admiral responsible to the Secretary of Transportation, provides basic policy guidance through a document called the Long Range View (LRV), which projects Coast Guard roles, missions, program needs and the expected operating environment for the next 15 years.

The Chief of Staff, the senior rear admiral in the service, is the focal point of policy and programming review. The Chief of Staff is responsible to the Commandant for the coordination of the various Program Directors, ensuring that policy is followed and prioritizing program items for inclusion in the Forecast Stage Budget being prepared for submission to DoT.

Program Directors are CGHQ office chiefs, rear admirals, responsible for "accomplishment of program objectives through short and long range planning, programming, and use of personnel and material" (U.S. Coast Guard, Planning and Programming Manual, 1983, p.2-1). They may direct more than one program. For example, the Chief, Office of Navigation is the Program Director for these programs: Short Range Aids to Navigation, Radionavigation Aids, Bridge Administration, Waterways Management, Search and Rescue, and Ice Operations.

Programs are the means for achieving Coast Guard objectives and are divided into two types, Operating Programs and Support Programs. Operating Programs like Search and Rescue directly serve the public. Support Programs primarily support other Coast Guard programs. For example, Engineering supports Enforcement of Laws and Treaties.

Program Managers are captains who are charged with supporting their Program Director by continuously reviewing and implementing routine program policy, preparing policy proposals, and working out details in planning, programming, budgeting and budget execution for a specific program.

> In meeting the responsibilities of his assignment, each Operating and Support Program Director/Manager is expected to:
>
> a. Manage with a clear objective consistently in the forefront.
>
> b. Develop and use a five year Program Plan which translates formal Coast Guard objectives into programs using measurable program benefit or output measures of effectiveness to match against costs.
>
> c. Identify policies under which the program is carried out (alternative policies permit alternative hardware, or mixes thereof).
>
> d. Perform studies of the impact of future changes in demand, policy, criteria and technology.
>
> e. Develop feasible alternatives and propose necessary legislation.
>
> f. Develop an appropriate data base (management information) for managing and evaluating the execution of the program.
>
> g. Review and/or develop program resource change proposals (RCP) and budgets and identify priorities for rapid dollar-level adjustments (e.g., for RDT&E, AC&I, OE).[1]
>
> h. Request, identify and give direction for major support requirements (e.g., personnel, engineering, comptroller, R&D).
>
> i. Provide program guidance to the field. (U.S. Coast Guard, Planning and Programming Manual, 1983, p.2-2)

The Operating and Support Managers use the LRV as guidance in producing their five year, output oriented Program Plans. From these plans Facility Requirements are generated to document the need for boats, aircraft, cutters, and command, control and communications that were identified in the Operations Program Plans or Support Program Plans. The Facility Requirements are then compiled and prioritized in the Capital Investment Projection (CIP).

---

[1] Research, Development, Test & Evaluation; Acquisition, Construction & Improvements; and Operating Expenses appropriations.

In addition to headquarters identified needs, field units may also submit requirements for inclusion in budget planning. These requirements are usually included in one of several forms such as a Planning Proposals, Comprehensive Proposals, and AC&I Project Proposals.

2. Programming

The first step of the programming phase of budget formulation is called Determinations. In this phase, Program Directors conduct a dialogue with the Commandant and Vice Commandant through the Chief of Staff and obtain an understanding of the goals and objectives which are to receive emphasis during preparation of the Forecast Stage Budget. The Commandant is directly accessible to the Program Directors during this step and provides personal responses with specific policy guidance.

Once the Determinations have been made, Program Directors have Resource Change Proposals (RCP´s) prepared by the Program Managers to request changes in resources for the current or a future budget year. Acquisition and operating budgets are developed in the RCP to identify the accounts impacted by the change and the estimated costs.

> Using RCP´s, the resource allocation process takes into account the decisions and directions provided during Determinations. RCP´s normally evolve from Program Plans, Planning Proposals, Comprehensive Proposals, ...AC&I Project Proposals, and the Capital Investment Projections. The RCP itself discusses the problem thoroughly and includes up to four alternatives together with the cost of each over a five year period.[2] All increases and decreases in resources required by the proposed change are also discussed. RCP´s are initially analyzed and ranked in a draft RCP list by the Chief, Programs Division (G-CPA).[3] (U.S. Coast Guard, Planning and Programming Manual, 1983, p.3-3)

The initial ranked list of RCP´s then goes to the Coordination Board chaired by the Deputy Chief of Staff, a captain. The Board is made up of all operations and support program managers as well as the deputy office chief from each office in CGHQ. The Board reviews the draft prioritized RCP list and decides on changes in ranking and deletion. The results of their review are presented to the Chief of Staff for review and approval. The Chief of Staff then presents the package to the Commandant for final approval.

3. Budgeting

Once the Commandant has approved the RCP list, it is sent to Budget Division (G-CBU) to be fully priced. Working with G-CPA, G-CBU turns the RCP listing into proposed appropriation legislation to be presented to the Secretary of Transportation, OMB, and eventually Congress. There are several appropriations which cover certain types of activities and expenses. For example the Operating Expense (OE) appropriation includes all operating costs such as fuel, maintenance, pay, leases, ammunition, etc. Other appropriations include Acquisition, Construction and Improvements (AC&I); Alteration of Bridges (BA); Reserve Training (RT); Research, Development, Test and Evaluation (RDT&E); Retired Pay (RP); and others.

---

[2] Costs are broken out by funding account in the RCP.

[3] Programs Division is under the Office of the Chief of Staff.

When Congress has enacted appropriations and OMB and DoT have apportioned the funds, G-CBU translates the appropriations into dollar amounts in various Operating Guides (OG), the numbered accounts that fund specific types of activities. They then monitor account levels during budget execution to detect potential problems and identify reprogramming needs.

Operations and maintenance costs all fall under the OE appropriation. The following OG´s are the O & M related funds under the OE appropriation to be analyzed in this thesis and are described in Figure 1.

Operating Guide	**Title**	**Description**
OG-30	Operating and Maintenance Costs	General housekeeping, repairs and maintenance, office supplies, utility services, leases, TAD expenses, minor equipment procurement, medical supplies, ammunition, fuel, etc.
OG-41	Aviation Program	Repairs, maintenance and modification to aircraft engines, airframes, electrical systems, hydraulic systems, survival systems, test equipment, and supplies, etc.
OG-42	Electronics Program	All electronic and some types of avionic maintenance and modification.
OG-45	Vessel Program	Maintenance, repair and modification of vessels,including main propulsion, generators,and other installed systems.

FIGURE 1 OPERATING GUIDES

III. METHOD OF ANALYSIS

Analysis was conducted on four different major acquisition projects, two vessel classes and two aircraft models. Three basic types of information were needed: the Operations and Maintenance budget models for each project, the actual operating activity for each platform, and the actual O & M expenses for each platform. This information was provided by mail and through personal contact with several offices in Coast Guard Headquarters (CGHQ).

Budget models for OG-30, OG-41, OG-42, and OG-45 were extracted from the Resource Change Proposals (RCP´s) on file with the responsible facility manager. Cutter RCP´s were obtained from Cutter Division (G-OCU) and aircraft RCP´s from Aviation Division (G-OAV) in the Office of Law Enforcement and Defense Operations (G-O), CGHQ. Each cutter and air station reports its operating activity quarterly in an Abstract of Operations Report which is filed in the Plans and Programs Division (G-OP) of G-O. G-OP provided summary reports by cutter and aircraft and by Fiscal Year (FY). Actual expenses were obtained in a summary by cutter class, aircraft model, Operating Guide (OG) and FY from Accounting Division (G-CAC) in the Office of the Chief of Staff (G-CCS).

Several years´ worth of RCP´s were reviewed for each project from the time the project was started or as far back as records were found to the RCP prepared during the FY in which the first platform became operational. This review was done to insure that no actual operating information could have been used to modify the O & M budget models considered. Each year´s RCP had adjustments for inflation and in some cases changes in the cost relationships in the budget model. The model selected was the one that held the most recent change in cost relationships, since the intent of the research was to determine how well costs could be predicted without specific operating information. Actual costs were then adjusted to current dollars of the budget model´s FY for analysis.

The accuracy of a budget model rests in the relationship of activity or other variables to expenses. If the model does not accurately capture this relationship, it can not provide meaningful cost projections. On the other hand, if the cost-activity relationship is accurate the model should be very useful.

A standard was needed to measure the accuracy of budget model predictions. Five percent of budget projection was chosen for the standard. If actual costs are within plus or minus 5 percent of the budget model´s projection for the actual activity level, than the model is considered to provide reliable information. This standard was chosen as a practical margin for error after reviewing the projected O & M sizes in relation to the portion of the OE appropriation containing O & M costs. As a worst case scenario, a total O & M budget error of five percent over budget for all operating units would be approximately $25 to $30 million, an amount that could probably be reprogrammed from other accounts if necessary without major political opposition.

Analysis of the cost budget model was conducted by generating budget predictions from the model for the actual levels of activity provided from the summary information. With activity level differences removed, the usefulness of the model was now observable. The differences between the adjusted actual expenditures and the budget model projections were calculated and converted to percentages of the cost budget projection. The mean and standard deviation of this sample of error percentages were then determined. By finding the mean and standard deviation of this sample and comparing them to the 5 percent standard, a measure of the overall accuracy of the model was made. This procedure was conducted for each platform OG budget. A mean of less than 5 percent would indicate an acceptably accurate model. If one or more standard deviations also fell within 5 percent, that would indicate a high concentration of error of less than 5 percent and so show relatively greater model accuracy. By conducting this analysis on each OG budget, a measurement was obtained of how well the specific types of costs in each OG were being projected.

To search for activity variables other than those currently used and perhaps to find a better model, regression analysis was conducted on the actual costs adjusted to the FY of the budget model used previously. Regression analysis is a statistical method of fitting a line or curve to a set of data. The method attempts to make the sum of the squared differences between the line or curve being fitted and the actual data as small as possible.

A single or multiple regression was conducted on each OG and total project budget using the same independent variables used in their respective budget models. This was done to enable a comparison between the Cost Estimating Relationship (CER) developed from the regression and the budget model.

A stepwise multiple regression was then performed in an effort to develop a better CER with activity variables that have a stronger relationship to cost than the ones used in the budget model. Stepwise analysis looks for those independent variables that contribute most to the total result while having the smallest mutual interaction. The procedure starts with one independent variable and continues step by step in evaluating each additional independent variable added for the amount of additional contribution it makes. When completed the stepwise multiple regression identified those activity variables among the ones analyzed that contributed the most to projecting O & M costs.

The actual statistical computations were conducted using the IBM 3033/4381 Network at the Naval Postgraduate School, Monterey, California. The Minitab statistical package as developed by the Pennsylvania State University and described in the **Minitab Handbook** was used to generate the results for analysis. Minitab was selected for it´s simplicity and familiarity. Simple mathematical calculations in consolidating data were done with a Hewlett-Packard calculator, HP-17B.

IV. ANALYSIS OF DATA

The analysis was conducted in two parts to address the basic research questions. The first part centered on analyzing the budget models used for each platform and determining the difference between projected costs and actual costs to measure model accuracy. The second part concentrated on developing Cost Estimating Relationships (CER´s) from statistical analysis of the cost histories available for each of the platforms in order to attempt better prediction of future costs.

A. BUDGET MODEL ACCURACY

First, the cost data collected was summarized in several categories for analysis. Aircraft costs were summed for each fiscal year under Operating and Maintenance Costs (OG-30), Aircraft Program (OG-41), and Electronics Program (OG-42). Vessel costs were summed the same way for OG-30, OG-42, and Vessel Program (OG-45).[1] Summaries were made for each fiscal year of total costs charged to each platform under the Operating Expense (OE) Appropriation. This is the sum of OG-30, OG-41, and OG-42 for aircraft and OG-30, OG-42, and OG-45 for vessels. The cost totals for each OG and fiscal year were then adjusted to a base year´s constant dollars to eliminate inflation effects. The base year was the fiscal year of the budget model used for each platform. Table 1 shows the actual cost data adjusted for inflation.

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[1] See Chapter II for explanation of OG-30, OG-41, etc.

The budget model used for analysis of each platform was the last model that indicated a change in cost relationships and that was prepared prior to the first platform becoming operational.[2] This was contained in the Resource Change Proposal (RCP) for follow-on funding to operate the platform. Then, using the actual activity data for each fiscal year, cost predictions were generated from the model. The model for each platform is broken down into cost equations for each operating guide that provides funding.

The first HU-25A was delivered in March of 1982. The budget request for FY 84 was being prepared at the time of delivery so the budget model contained in the HU-25A RCP for FY 84 was chosen for analysis. Complete cost data in all OG´s for the HU-25A was not available for FY 82 through FY 84.

The first HH-65A was delivered in November of 1984. The last model that showed a significant change in relationships prior to delivery was contained in the FY 85 RCP for HH-65A follow-on funding. This model was chosen for use. Once again complete cost data for each OG was not available until FY 86.

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[2] See Chapter III for explanation of model selection criteria.

TABLE 1

INFLATION ADJUSTED ACTUAL COST DATA BY PLATFORM & OG[3]

HU-25A (in FY 84 dollars)

FY	OG-30	OG-41	OG-42	Total OE
1985	9,317,983	14,561,683	5,023,112	28,902,768
1986	8,453,662	34,447,988	5,233,419	48,135,040
1987	8,003,358	17,468,386	2,947,493	28,419,216
1988	5,833.935	26,311,288	89,942	32,235,136

HH-65A (in FY 85 dollars)

FY	OG-30	OG-41	OG-42	Total OE
1986	4,415,413	7,645,919	2,451,844	14,513,176
1987	8,198,760	15,214,315	2,523,044	25,936,112
1988	8,920,478	19,015,398	2,090,417	30,026,272

270 WMEC (in FY 84 dollars)

FY	OG-30	OG-42	OG-45	Total OE
1983	357,205	4,107	34,454	395,766
1984	1,234,381	26,861	93,474	1,354,716
1985	2,279,572	45,186	582,521	2,907,279
1986	4,597,716	509,326	1,169,952	6,276,994
1987	5,854,990	669,412	1,716,011	8,240,413
1988	7,111,166	106,618	1,393,483	8,611,267

110 WPB (in FY 87 dollars)

FY	OG-30	OG-42	OG-45	Total OE
1986	317,485	00	6,773	324,258
1987	2,275,635	29,860	139,316	2,444,811
1988	1,964,164	4,106	851,300	2,819,570

The USCGC BEAR (WMEC 901), the first of the 270 foot medium endurance cutters, was delivered in January of 1983. The budget model in the RCP for follow-on funding in FY 84 was the last to show a change in budget relationships before

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[3] Inflation rates are contained in Appendix A.

BEAR´s delivery. It was chosen for analysis purposes. Cost data was available from FY 83 through FY 88. In November of 1984 the USCGC FARALLON (WPB 1301) was the first of the 110 foot patrol boats to be delivered. The budget model selected came from the FY 87 RCP for follow-on funding which was being prepared at that time. The first cost data became available for the class in FY 86.

Table 2 contains the budget models used and the predicted costs they generated for the aircraft analyzed. Table 3 contains the same information for the.cutters. The predictions were generated using actual resource hours (Res Hrs), flight hours, days underway (Days U/W) reported for each FY and the weighted average number of aircraft or cutters for that year. For example, the weighted average for two cutters operational for one half year and one quarter year respectively would be three quarters of a cutter.

Budget model accuracy was measured by computing the absolute difference (i.e., the absolute value of the difference) for each fiscal year between the predicted costs and the actual costs. The difference was then converted into a percentage of the budget model. The mean and standard deviation of these errors were then computed. Table 4 shows the absolute error for each FY, the sample mean with a 95 percent confidence interval (95% CI), and the sample standard deviation for each platform and OG. The means and standard deviations are rounded to two decimal places for display.

Calculations were conducted to seven significant digits by the Minitab program (Minitab, Inc., 1988, p.19). The 95 percent CI was calculated using the Student´s t-distribution for small samples and indicates a 95 percent probability that the actual error population mean is within the limits specified (Weiss, 1987, pp. 323-330).

Now the means and confidence intervals (CI) can be compared to the error standard of 5 percent of budget prediction. In every case the sample error mean was far greater than the 5 percent standard. When the 95 percent confidence intervals are used to compare the mean of the population of budget errors to the standard, only two cases find the CI reaching into the acceptable error range. The OG-30 error for the HH-65A and the OG-41 error for the HU-25A have the largest CI´s of the platform OG´s considered and do expand into the acceptable error range.

All the sample error means were very high. Even the lowest sample error of 37.55 percent for the OG-30 costs for the HU-25A still indicates a difference of some $3 million between budget and actual expenses. In almost every case for the HU-25A, HH-65A, and 270 WMEC, the budget estimate is consistently higher than the actual costs. Only the 110 WPB had actual costs run higher than budget predictions. In general the error means indicate that general operations and maintenance costs (OG-30) are better predicted than the specific maintenance costs for electronics (OG-42), aircraft

TABLE 2 AIRCRAFT BUDGET MODELS AND COST PREDICTIONS

HU-25A

FY 84 Models:

OG-30 costs = $59,000/aircraft + $511,500/flight hour
OG-41 costs = $254,000/aircraft + $530,400/flight hour
OG-42 costs = no budget found in any FY examined

Predictions:

FY	OG-30	OG-41	Average Aircraft[4]	Flight Hours
1985	13,131,720	20,124,612	33.75	21,780
1986	12,678,268	19,534,856	33.31	20,965
1987	12,711,335	19,401,392	32.26	21,130
1988	11,858,905	18,083,619	30.01	19,723

HH-65A

FY 85 Models:

OG-30 costs = $65,000/aircraft + $122,300/flight hour
OG-41 costs = $215,100/aircraft + $527,500/flight hour
OG-42 costs = no budget found in any FY examined

Predictions:

FY	OG-30	OG-41	Average Aircraft	Flight Hours
1986	2,911,788	11,088,152	22.54	11,829
1987	5,147,074	19,499,896	41.38	20,093
1988	7,170,239	27,122,013	58.30	27,643

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[4] See Table 5 for an explanation of average aircraft.

TABLE 3 CUTTER BUDGET MODELS AND COST PREDICTIONS

270 WMEC

FY 84 Models:

OG-30 costs = $603,000/cutter + $6,609/day underway
OG-42 costs = $282,000/cutter
OG-45 costs = $909,000/cutter

Predictions:

FY	OG-30	OG-42	OG-45	Avg No Cutters[5]	Days U/W
1983	695,002	211,500	618,750	0.75	40
1984	2,654,503	705,000	2,272,500	2.50	189
1985	4,927,332	1,362,060	4,390,470	4.83	332
1986	6,734,204	1,480,500	4,772,250	5.25	588
1987	9,386,208	1,926,060	6,208,470	6.83	868
1988	12,368,737	2,608,500	8,408,250	9.25	1,119

110 WPB

FY 87 Models:

OG-30 costs = $60,000/cutter + $80.56/resource hour
OG-42 costs = $11,500/cutter
OG-45 costs = $297,400/cutter

Predictions:

FY	OG-30	OG-42	OG-45	Avg No Cutters	Res Hrs
1986	219,600	42,090	1,088,484	3.66	479
1987	794,400	152,835	3,593,446	13.29	1,833
1988	1,102,800	211,370	5,466,212	18.38	2,104

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[5] See Table 5 for an explanation of average number of cutters.

After finding the regressions with the highest r^2 values, the t-ratios for the B_0 and B_1 values were tested. This is a hypothesis test using Student´s t-distributions. The null hypothesis is that the coefficient or constant tested is not statistically different from zero. The alternative hypothesis is that the coefficient or constant is statistically different from zero. The test was done by comparing the t-ratio to a critical value from the appropriate t-distribution. A significance level of 0.05 was used for this test, so that the chances of rejecting the null hypothesis (H_0) when it should have been accepted are 5 percent. Then the number of degrees of freedom (df) for each regression is determined from the number of observations (n) in the data: df = n - 2. Now the t-distribution table for a 0.05 significance level is used to identify the critical value, denoted as t_{df}. This test is called a two-tailed test since we are checking to see if B_0 and B_1 are significantly greater than or less than zero. If the t-ratio generated is smaller than the positive critical value or larger than the negative critical value, than H_0 is accepted as true. If it is not, then the alternative hypothesis is true and the B value tested is meaningful.

Lastly the entire regression equation itself is tested in a method similar to the t-test for each of B_0 and B_1. The procedure is called analysis of variance. Here we test the null hypothesis that the regression equation is no better a predictor of actual costs than the mean value of those costs. This is done by first calculating the sum of the squared differences between the mean of actual costs and the regression predicted costs. Then the mean of this value yields the Regression Sum of Squares (SSR). The SSR is then divided by its degrees of freedom to yield the Mean Treatment Sum of Squares (MSTR). Next the mean of the sum of the squared differences between the regression predicted costs and the actual costs is calculated to yield the Error Sum of Squares (SSE). The SSE is divided by its degrees of freedom to yield the Mean Error Sum of Squares (MSE). The F-statistic is generated by dividing the MSTR by the MSE. This test is a one-tailed test because it checks only to see if the F-statistic is significantly greater than one according to the F-distribution. This indicates that the regression equation better explains the cost values than the mean of the cost values. The F-statistic is compared to the critical value from the appropriate F-distribution table. This critical value is symbolized by the letter F with two subscripted numbers following it, which indicate the degrees of freedom of the F distribution. Again a significance level of 0.05 was used. If the F-statistic is greater than the critical value, then the null hypothesis is rejected and the regression is significant. If it is less then the critical value than the null hypothesis is accepted and the regression is not useful.

In order to identify which activity variables would be the best to use in a regression, a linear correlation analysis was conducted between each OG cost and activity variable. Activity variables with strong correlation to OG cost are good predictors in a regression. In addition, correlations were obtained between each of the activity variables to identify which ones were strongly correlated and so probably not suitable for use in a multiple regression.

A linear correlation is expressed as a coefficient which "is a single number that can be used to describe the strength of the linear (straight-line) relationship between two variables" (Weiss, 1987, p.525). The correlation coefficient, r, is a number between +1 and -1. The closer the coefficient is to +1 or -1, the stronger the linear relationship between the variables. The closer r gets to zero, the weaker the linear relationship. r values near +1 are positively correlated and indicate that both variable change linearly in the same direction, that is they increase and decrease at the same time. r values near -1 are negatively correlated indicating that they change in opposite directions. As one increases the other decreases.

1. CER´s for the HU-25A

Table 6 shows the correlation analysis for the HU-25 OG-30, OG-41, OG-42 funds and total OE appropriations. It also shows, in the two columns on the right, the correlation between each of the activity variables. Strong positive correlations (greater than 0.5) were obtained for OG-30 and OG-42 costs, while weak or no correlations were obtained for OG-41 and total OE costs.

TABLE 6

CORRELATION ANALYSIS FOR HU-25A COSTS & ACTIVITY VARIABLES

	OE	OG-30	OG-41	OG-42	Flt Hrs	Sorties
Flt Hrs	-.116	0.978	0.328	0.866		
Sorties	0.103	0.960	0.407	0.914	0.949	
Avg A/C	0.189	0.995	-.372	0.977	0.951	0.953

There was virtually no correlation between any of the activity variables and total OE costs of the HU-25A. Regressions were run on each variable as well as for all combinations of two variables.[6] As expected, no significant regressions were identified, as both t-tests and analysis of variance failed to show significance. Multiple regression with two variables also yielded no significant results.

All variables showed very strong correlation to OG-30 costs. The average number of aircraft was the first variable tested because it had the highest correlation. It yielded the most significant regression of all the single variables tested, with an r^2 value of 99.0 percent. Further, both t-test and analysis of variance proved the regression equation´s significance. Because of the large amount of interaction between the activity variables, as shown by the correlation results, multiple regressions did not make a significant improvement in the r^2 value. The regression results for average number of aircraft were as follows:

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[6] Appendix C contains the Minitab output for the regressions computed.

OG-30 = -21,196,960 + 901,253 Avg A/C

$r^2 = 99.0\%$
$F = 189.63$
$F_{12} = 18.51$

Predictors	t-ratio	t_2
Constant	-10.02	4.30
Avg A/C	13.77	

Activity variable correlations for OG-41 costs were weak, less than 0.5 in two cases and weakly negative in the third. None of the regressions was significant for either t-test of the coefficients or analysis of variance of the regression. Sorties showed the highest r^2 value, 16.6 percent.

The correlations for OG-42 costs were very strong. Regressions of flight hours, sorties, and average number of aircraft all gave r^2 values of over 75.0 percent. The best regression and the only one to be significant was for the average number of aircraft. The results were:

OG-42 = -42,756,912 + 1,427,190 Avg A/C

$r^2 = 95.5\%$
$F = 42.82$
$F_{12} = 18.51$

Predictor	t-ratio	t_2
Constant	-6.07	4.30
Avg A/C	6.54	

2. CER´s for the HH-65A

Table 7 show the correlation results for the HH-65A costs. All variables showed very strong correlations, both positive and negative, to costs. Regression analysis was limited because all of the activity variables were perfectly correlated with each other. Multiple regressions were not conducted. None of the regressions proved significant in analysis of variance due to the small amount of data (three years) available in the sample. Also, many times the regression coefficients failed the t-test for significance, again due to the small sample size.

TABLE 7

CORRELATION ANALYSIS FOR HH-65A COSTS & ACTIVITY VARIABLES

	OE	OG-30	OG-41	OG-42	Flt Hrs	Sorties
Flt Hrs	0.971	0.940	0.987	-.762		
Sorties	0.972	0.942	0.987	-.759	1.000	
Avg A/C	0.972	0.942	0.988	-.759	1.000	1.000

Both average number of aircraft and sorties showed strong correlations and, as expected, proved excellent predictors of total OE costs for the aircraft. The average number of aircraft proved very slightly better with an r^2 value of 94.6 percent compared to 94.5 percent for sorties. Both regressions were found not to be significant by analysis of variance and t-test. Because the activity coefficients were perfectly correlated, multiple regressions were not done. The best results were as follows:

Total OE = 5,685,976 + 437,061 Avg A/C

$r^2 = 94.6\%$
$F = 17.38$
$F_{1\,1} = 161.4$

Predictor	t-ratio	t_1
Constant	1.25	12.71
Avg A/C	4.17	

Total OE = 5,279,717 + 1,321 Sorties

$r^2 = 94.5\%$
$F = 17.32$
$F_{1\,1} = 161.4$

Predictor	t-ratio	t_1
Constant	1.14	12.71
Sorties	4.16	

Similar results were obtained for OG-30 costs. Again sorties and the average number of aircraft had the highest correlations. Both regressions had high r^2 values, but neither coefficients nor the regressions themselves were found significant. There results follow:

OG-30 = 1,988,331 + 127,390 Avg A/C

r^2 = 88.7%
F = 7.85
$F_{1\,1}$ = 161.4

Predictors	t-ratio	t_1
Constant	1.01	12.71
Avg A/C	2.80	

OG-30 = 1,870,142 + 385 Sorties

r^2 = 88.7%
F = 7.83
$F_{1\,1}$ = 161.4

Predictors	t-ratio	t_1
Constant	0.93	12.71
Sorties	2.80	

Results of the OG-41 regressions were slightly better than those for OG-30. Once again sorties and average number of aircraft proved the best predictors with the same r^2 value of 97.5 percent. Analysis of variance proved none of the regressions significant and the t-test of coefficients showed none of the activity variable coefficients as significant. The average number of aircraft had slightly better results as shown here.

OG-41 = 941,432 + 319,517 Avg A/C

r^2 = 97.5%
F = 39.38
$F_{1\,1}$ = 161.4

Predictors	t-ratio	t_1
Constant	0.43	12.71
Avg A/C	6.27	

OG-41 = 644,048 + 965 Sorties

r^2 = 97.5%
F = 39.19
$F_{1\,1}$ = 161.4

Predictors	t-ratio	t_1
Constant	0.29	12.71
Sorties	6.29	

Lastly, OG-42 followed the same pattern as the others except for the r^2 values, which were much lower (50 to 60% range) than most of the other cost regressions run for this aircraft. Also, this time flight hours proved to be the slightly better predictor.

OG-42 = 2,799,063 - 22.4 Flt Hrs

$r^2 = 58.1\%$
$F = 1.39$
$F_{1\,1} = 161.4$

Predictor	t-ratio	t_1
Constant	7.06	12.71
Flt Hrs	-1.18	

OG-42 = 2,765,516 - 29.8 Sorties

$r^2 = 57.7\%$
$F = 1.36$
$F_{1\,1} = 161.4$

Predictor	t-ratio	t_1
Constant	7.42	12.71
Sorties	-1.17	

3. CER´s for the 270 WMEC

The correlation analysis for the 270 WMEC is contained in Table 8. All of the activity variables showed a positive correlation to costs. Like the aircraft variables, the cutter variables were also strongly correlated with each other but not to the unusually high degree. Multiple regressions were conducted for the cutters and more significant results were obtained.

TABLE 8

CORRELATION ANALYSIS FOR 270 WMEC COSTS & ACTIVITY VARIABLES

	OE	OG-30	OG-42	OG-45
DAFHP	0.837	0.879	0.241	0.768
DaysU/W	0.976	0.993	0.518	0.923
Missions	0.985	0.988	0.610	0.952
Res Hrs	0.981	0.994	0.545	0.934
Days AFO	0.951	0.977	0.440	0.892
Avg No	0.937	0.962	0.425	0.884
FY	0.979	0.991	0.540	0.935
Inv Cost	0.874	0.871	0.526	0.874

	DAFHP	Days U/W	Msns	Res Hrs	Days AFO	Avg No	FY
Days U/W	0.922						
Missions	0.883	0.990					
Res Hrs	0.907	0.999	0.995				
Days AFO	0.956	0.994	0.975	0.990			
Avg No	0.959	0.973	0.940	0.963	0.983		
FY	0.923	0.991	0.976	0.987	0.985	0.988	
Inv Cost	0.819	0.849	0.820	0.840	0.850	0.922	0.906

The best simple regression for total OE costs used total number of missions. The regression yielded an r^2 value of 97.1 percent but failed to show significance in the analysis of variance. t-tests of the coefficients showed the missions coefficient to be significant, but not the constant. The best multiple regression on total OE costs used days awayfrom home port and fiscal year as activity variables. This regression yielded an r^2 value of 98.8 percent. The analysis of variance proved significant and two of the regression coefficients were significant by t-test. There was, as expected, a large amount of interaction or "overlap" between the two variables. The simple and multiple regression results follow.

Total OE = 569,437 + 21,027 Missions

r^2 = 97.1%
F = 132.91
$F_{1\ 4}$ = 224.6

Predictor	t-test	t_4
Constant	1.27	2.78
Missions	11.53	

Total OE = -218,911,040 + 2,647,748 FY - 3,439 DAFHP

r^2 = 98.8%
F = 119.32
$F_{2\ 3}$ = 9.55

Predictor	t-test	t_4
Constant	-8.36	2.78
FY	8.33	
DAFHP	-2.68	

The best simple regression for OG-30 costs used total resource hours as its activity variable or cost driver. This regression had an r^2 value of 98.7 percent and analysis of variance proved its significance. Its weakness lies in the significance of the constant value, which failed the t-test. Still, overall, it is a very good predictor. Multiple regressions yielded higher r^2 values but the amount of interaction between variables was so high that the single regression was considered the better predictor. In addition, only one of the multiple regression coefficients proved significant. The resource hours regression and the best multiple regression are shown below.

OG-30 = 387,191 = 318 Res Hrs

r^2 = 98.7%
F = 312.71
$F_{1\ 4}$ = 224.6

Predictor	t-test	t_4
Constant	1.71	2.78
Res Hrs	17.68	

OG-30 = -6,241,345 + 285 Res Hrs + 0.0095 Inv Cost

r^2 = 99.2%
F = 180.78
$F_{2\ 3}$ = 9.55

Predictor	t-test	t_4
Constant	-1.96	2.78
Res Hrs	9.23	
Days-U/W	1.27	

The results of the OG-42 regressions were poor. The best simple regression achieved an r^2 value of only 37.2 percent. None of the simple regressions proved significant by analysis of variance and none of the regression coefficients proved significant in t-testing. Multiple regressions had similar results, with the exception that in the best multiple regression one of the activity variable coefficients proved significant. The best r^2 value achieved was 77.3 percent with less interaction between variables than had occurred in other multiple regressions conducted but also with more unexplained error than in previous regressions. The best simple and multiple regressions are shown below.

OG-42 = 23,856 + 1,051 Missions

$r^2 = 37.2\%$
$F = 2.37$
$F_{1\ 4} = 224.6$

Predictor	t-ratio	t_4
Constant	0.14	2.78
Missions	1.54	

OG-42 = 316,601 + 3,101 Missions - 834 DAFHP

$r^2 = 77.3\%$
$F = 5.10$
$F_{1\ 4} = 224.6$

Predictor	t-ratio	t_4
Constant	1.83	2.78
Missions	3.07	
DAFHP	-2.30	

Regressions for OG-45 showed a better result from a multiple regression with FY and DAFHP than from any simple regression. The r^2 value was 93.3 percent and analysis of variance proved the regression to be significant. Both the constant and the FY coefficient proved significant but the DAFHP coefficient did not. The overlap of the activity variables was 56.68 percent. The same coefficient of determination was achieved in a regression of missions and investment costs, which proved significant in analysis of variance but had only one significant variable in the t-test. The best simple regression used missions and achieved an r^2 value of 90.6 percent. The regression did not prove significant in analysis of variance nor did the regression constant in the t-test. The best multiple regression and the best simple regression are shown here.

OG-45 = 58,290 + 4,004 Missions

r^2 = 90.6%
F = 38.77
$F_{1\ 4}$ = 224.6

Predictor	t-ratio	t_4
Constant	0.37	2.78
Missions	6.23	

OG-45 = -47,124,688 + 570,179 FY - 961 DAFHP

r^2 = 93.3%
F = 21.02
$F_{2\ 3}$ = 9.55

Predictor	t-ratio	t_4
Constant	-3.94	2.78
FY	3.93	
DAFHP	-1.64	

4. CER´s for the 110 WPB

Table 9 shows the results of the correlation analysis for costs and activity variables of the 110 WPB. In general correlations were fairly high except for OG-42 costs. Regression results obtained high r^2 values overall but failed to prove significant in analysis of variance in most cases. This was due to the very small amount of data available (3 years).

TABLE 9

CORRELATION ANALYSIS FOR 110 WPB COSTS & ACTIVITY VARIABLES

	OE	OG-30	OG-42	OG-45
DAFHP	0.993	0.917	0.379	0.803
Days U/W	1.000	0.954	0.475	0.735
Missions	0.941	0.805	0.164	0.915
Res Hrs	0.999	0.970	0.525	0.695
Days AFO	0.988	0.905	0.352	0.820
Avg No	0.979	0.880	0.299	0.851
Inv Cost	0.927	0.782	0.127	0.930

	DAFHP	Days U/W	Msns	Res Hrs	Days AFO	Avg No
Days U/W	0.994					
Missions	0.975	0.946				
Res Hrs	0.987	0.998	0.926			
Days AFO	1.000	0.991	0.981	0.981		
Avg No	0.996	0.982	0.990	0.969	0.998	
Inv Cost	0.966	0.933	0.999	0.911	0.973	0.985

The results of the total OE regressions for the 110 WPB showed that days underway was an outstanding predictor of total OE costs in a simple regression. The r^2 value was 100 percent. The analysis of variance was significant and the regression coefficients for days underway was also. Unfortunately, it is important to remember that the regression was done only on the three years of data available. The next strongest predictor was resource hours with an r^2 value of 99.8 percent and a significant analysis of variance. The regression constant failed the t-test but it only just failed. Because the simple regressions gave such high r^2 values and the high correlation between activity variables, no multiple regressions were done on total OE costs. The results are summarized here.

Total OE = -411,966 + 1,545 Days U/W

r^2 = 100%
F = 3640.54
$F_{1\,1}$ = 161.4

Predictor	t-ratio	t_1
Constant	-9.84	12.71
Days U/W	60.34	

Total OE = -438,030 + 94.8 Res Hrs

r^2 = 99.8%
F = 570.84
$F_{1\,1}$ = 161.4

Predictor	t-ratio	t_1
Constant	-4.22	12.71
Res Hrs	23.89	

OG-30 regressions had similar r^2 values to that of the total OE costs but none of the analysis of variances proved the results to be significant. None of the regression coefficients showed significance either. The highest coefficient of determination, best t-ratios, and best F-statistic were generated by the simple regression with resource hours. Days underway had the next best result. Again the problems with these regressions is most likely the small sample size. The regression summarizations follow.

OG-30 = -227,315 + 72.0 Res Hrs

r^2 = 94.0%
F = 15.80
$F_{1\,1}$ = 161.4

Predictor	t-ratio	t_1
Constant	-0.47	12.71
Res Hrs	3.98	

OG-30 = -178,007 + 1,153 Days U/W

r^2 = 91.0%
F = 10.10
$F_{1\,1}$ = 161.4

Predictor	t-ratio	t_1
Constant	-0.30	12.71
Days U/W	3.18	

Regressions on OG-42 costs had very poor results, as was expected from the weak correlation of activity variables to OG-42 costs. Due to the very high correlation between activity variables only simple regressions were attempted.

Even these yielded low values for r^2. None of the regressions coefficients nor any analysis of variance proved significant results. The best results came again from resource hours with an r^2 value of 27.6 percent. Days underway was the second best predictor with a value of 22.5 percent for r^2. The best two results are summarized here.

OG-42 = -3,225 + 0.6 Res Hrs

$r^2 = 27.6\%$
$F = 0.38$
$F_{1,1} = 161.4$

Predictor	t-ratio	t_1
Constant	-0.12	12.71
Res Hrs	0.62	

OG-42 = -1,666 + 8.82 Days U/W

$r^2 = 22.5\%$
$F = 0.29$
$F_{1,1} = 161.4$

Predictor	t-ratio	t_1
Constant	-0.06	12.71
Days U/W	0.54	

The regressions on OG-45 costs showed some surprising results. As before, only simple regressions were run due to the high correlation between the activity variables. The best result was generated by investment cost (not resource hours or days underway), which yielded an 86.4 percent r^2 value. As before, none of the regressions or regression coefficients proved significant. The best regression is summarized here.

OG-45 = -632,711 + 0.00862 Inv Cost

$r^2 = 86.4\%$
$F = 6.38$
$F_{1,1} = 161.4$

Predictor	t-ratio	t_1
Constant	-1.56	12.71
Inv Cost	2.52	

V. CONCLUSIONS AND RECOMMENDATIONS

A. BUDGET MODEL PERFORMANCE

The first primary research question ("How well do the O & M budget models predict actual costs") is easy to answer, given the analysis results. The budget models studied did a very poor job in estimating the actual O & M costs of new platforms. Mean errors ran from a low of 37.5 percent for the HU-25A OG-30 costs to a high of 93.7 percent of budget estimate for the 110 WPB OG-45 costs. These are not good predictions by any standard let alone the 5 percent of budget standard used in this analysis.

The errors were significant in every operating guide examined though some showed better accuracy then others. In general, OG-41 costs were consistently better estimated than any others. All the OG-41 budget predictions were in error by less than 40 percent of budget. The costs for OG-30 were also better predicted, with errors consistently under 50 percent and relatively small standard deviations. While showing very large errors, the OG-42 and OG-45 errors were surprising consistent in the amount of the error. Their standard deviations were not that much larger than those for OG-30 and OG-41. It is also important to remember that the error values are absolute values and in some situations the errors were over budget vice under budget.[1] Aircraft costs seemed on the whole to be better predicted than those for cutters. The most significant result, however, was that most O & M costs were highly overestimated.

The reasons for these errors is difficult to determine. Naturally, each procurement program had it´s own unique circumstances that could have influenced the O & M costs for the platform. For example, as mentioned in Chapter IV, the HU-25A developed engine and parts problems during procurement because of the selection of a previously never-used engine for use in the aircraft. The engine experienced higher-than-expected repair parts consumption, as noted in testimony on the Coast Guard´s FY 83 budget request before the House Appropriations Committee´s (HAC) Subcommittee on DoT Appropriations (HAC Hearings, 98th Congress, 1st Session, 1983, p.504). Because the HU-25A was not operated by DoD, parts for it were not already being procured by the government. This required the Coast Guard to build a complete parts inventory for the aircraft instead of using DoD´s stock system as had been done for other aircraft in the service´s inventory. This problem, coupled with the high repair parts usage which persisted for several years, could account for OG-41 costs being over the inflation adjusted budget in FY 85 and FY 88. It does not, however, account for the overestimation of OG-41 costs or of OG-30 costs in the other fiscal years.

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[1] See Chapter IV (A) for details of error directions.

The HH-65A had a repair parts problem for reasons similar to those for the HU-25A, according to Coast Guard testimony before the HAC on the FY 85 budget (HAC Hearings, 99th Congress, 1st Session, 1985, p.777). OG-41 predictions, however, were the costs consistently overestimated. It was OG-30 costs that were underestimated. It seems unlikely that OG-30 underestimation would be related to the parts problem, since it would have been inappropriate to charge those expenses to OG-30. Still, this could have been a contributing factor, since OG-30 is a general "catch-all" account, frequently charged when in doubt.

No explanation other than the effect of new ship engineering problems on operational activity could be provided for the overestimation of O & M costs for the 270 WMEC. While the 110 WPB OG-30 costs were underestimated, OG-42 and OG-45 costs were grossly overestimated. Explaining these discrepancies is not easy. The OG-30 costs could be accounted for by looking at the funding source. The 110 WPB´s were bought with funds transferred from DoD and from anti-narcotics legislation funded separately by Congress. The facts that OG-30 costs would be most affected by increased operation and Congress was funding stepped up enforcement efforts with funds that could not be used elsewhere could explain the difference. The OG-42 and 45 errors are not directly explainable. However, since OG-30 was "rich" from special funding, costs properly charged to OG-42 and 45 might have been charged to OG-30 to take advantage of this funding for the 110 class and leave the other operating guides with funds to spend on other cutter classes not receiving the extra funds.

All the overestimation may be part of a routine effort to plan for the unexpected both in terms of operations and in terms of funding. Catastrophic failures or accidents occur and funds are always needed to handle them. A common government "budget ploy" is to ask for more than you need to give reviewers something to cut. The budget climate of the 80´s has not been a rich one for the Coast Guard, so it seems unlikely that the O & M budgets were padded to the extent of 80 to 90 percent, as determined here. In short, it is not clear why overestimation of O & M budgets was as severe as indicated or if the models could have done a better job.

B. PARAMETRIC METHODS

Parametric methods of estimations like regression analysis would seem to be very suitable for use by the Coast Guard. Generally strong Cost Estimating Relationships (CER´s) were developed for all the platforms. Exceptionally high r^2 values were obtained. While some regressions were not statistically significant probably because of the small sample sizes, the high coefficients of determination indicate that the technique could be worth using.

The CER´s generated do a much better job of predicting the actual costs incurred than do the budget models. Days away from home port, sorties, resource hours, flight hours, days underway, missions, and fiscal year all proved to be good activity parameters to use in predicting the O & M costs of aircraft and cutters.

C. GENERAL CONCLUSIONS AND RECOMMENDATIONS

This analysis indicates that the present method of estimating the O & M costs of new platforms is highly inaccurate and could lead to selection of the wrong platform in a LCC analysis. In particular, the costs for electronics maintenance and vessel maintenance seem to be the least understood. Perhaps the overestimation is a reflection of a concern for sufficient funding to cover unexpected major casualties. The general housekeeping, fuel and aircraft repair costs are the best estimated, though accuracy in these areas is still not very good.

An important question which came up repeatedly in trying to find the reasons for these errors related to proper charging of costs to an operating guide. Because most operating units only have direct control of OG-30 funds, emergency repairs and time critical purchases are often charged to OG-30 instead of a more appropriate account.

Thus, CGHQ may be inadvertently budgeting for costs twice in estimating OG-30 costs and other maintenance accounts. Identifying practices for charging accounts is very difficult and takes on-site observation. Correcting problems discovered takes training and the commitment of all levels of the chain of command.

The strong results of parametric methods of cost estimation warrant further research using larger samples. A practical application of this analysis is to group platforms into general categories such as patrol boats, short range recovery helicopters, medium endurance cutters, etc., and collect cost and activity data on all platform classes that fall in these categories for a 10 to 15 year period. This data would be used as a basis for generating CER´s to be used in estimating O & M costs for new platforms of the same category. Adjustments for inflation and any unique equipment with special costs could be used to fine tune the results. This might be a more accurate, less time consuming method of estimation. It would put the majority of the guess work into predicting activity levels instead of estimating cost relationships.

APPENDIX A. INFLATION RATES

The following inflation rates were used to adjust actual cost data to the budget year for the budget model used for analysis. These percentage rates were taken from the Consumer Price Index for All Urban Consumers (CPI-U) as listed in the publication **Economic Indicators** compiled by the Council of Economic Advisors in January 1989.

Fiscal Year	CPI-U
1983	3.2%
1984	4.3%
1985	3.6%
1986	1.9%
1987	3.6%
1988	4.1%

APPENDIX B. COST AND ACTIVITY DATA

AIRCRAFT REPORT

FY 86
OPERATING COSTS FOR COMPARISON
FY 85 VS FY 86

A/C TYPE	NUMBER OF A/C	FLY. HRS	PERS. COSTS	OPER. & FUEL	MAINT. OTHER	A/C PROG 44	ELEC. PROG. 42	SHORE UNIT PROG	OTHER COSTS	TOTAL	PER A/C	PER FLY.HR.
HH-3F FY86	29.03	19,436	28,844,910	2,963,818	4,692,920	16,682,598	1,842,280	885,665	710,770	54,642,961	1,951,187	2,914
FY85	31.72	21,115	27,963,696	4,400,119	5,815,246	17,083,015	-168,759	692,684	598,331	54,404,332	1,778,195	2,671
VARIANCE												
FY86-FY85	-2.69	-1,679	881,214	-1,436,301	-1,122,326	-400,417	2,011,039	192,981	112,439	238,629	172,993	243
FY86-FY85/FY85	-8.48%	-7.95%	3.15%	-32.64%	-19.30%	-2.34%	-1,191.66%	27.86%	18.79%	0.42	9.73%	9.10%
HU-25A FY86	33.12	20,965	21,121,185	4,376,986	4,547,409	36,366,190	5,524,837	811,699	779,858	73,528,164	2,220,053	3,507
FY85	36.75	21,780	20,612,351	4,842,798	4,810,633	15,085,904	5,203,944	534,299	642,283	51,732,212	1,407,679	2,375
VARIANCE												
FY86-FY85	-3.63	-815	508,834	-465,812	-263,224	21,280,286	320,893	277,400	137,575	21,795,952	812,374	1,132
FY86-FY85/FY85	-9.88%	-3.74%	2.47%	-9.62%	-5.47%	141.06%	6.17%	51.92%	21.42%	42.13	57.71%	47.66%
HH52A FY86	57.41	30,023	33,909,046	2,583,050	7,751,914	7,190,920	788,742	1,998,441	1,402,148	55,624,261	968,895	1,853
FY85	66.92	40,688	37,732,906	4,828,611	8,798,687	8,767,189	-1,761,417	1,219,265	1,209,894	60,795,135	908,475	1,494
VARIANCE												
FY86-FY85	-9.51	-10,665	-3,823,860	-2,245,561	-1,046,773	-1,576,269	2,550,159	779,176	192,254	-5,170,874	60,420	359
FY86-FY85/FY85	-14.21%	-26.21%	-10.13%	-46.51%	-11.90%	-17.98%	-144.78%	63.91%	15.89%	-8.51	6.65%	24.00%
HC-130 FY86	20.59	18,679	23,361,202	10,516,356	3,415,630	7,578,345	518,846	613,229	428,739	46,432,347	2,255,092	2,486
FY85	19.11	19,878	19,843,008	14,815,449	4,153,719	9,826,965	-719,884	407,194	330,356	48,656,807	2,546,144	2,448
VARIANCE												
FY86-FY85	1.48	-1,199	3,518,194	-4,299,093	-738,089	-2,248,620	1,238,730	206,035	98,383	-2,224,460	-291,052	38
FY86-FY85/FY85	7.74%	-6.03%	17.73%	-29.02%	-17.77%	-22.88%	-172.07%	50.60%	29.78%	-4.57	-11.43%	1.55%
VC11A FY86	1	530	682,158	274,794	136,388	373,011	18,993	1,035	20,578	1,506,957	1,506,957	2,843
FY85	1	485	677,163	310,870	210,516	304,809	-10,320	1,744	17,008	1,511,790	1,511,790	3,117
VARIANCE												
FY86-FY85	0	45	4,995	-36,076	-74,128	68,202	29,313	-709	3,570	-4,833	-4,833	-274
FY86-FY85/FY85	0.00%	9.28%	0.74%	-11.60%	-35.21%	22.38%	-284.04%	-40.65%	20.99%	-0.32	-0.32%	-8.78%
VC4A FY86	1	639	477,738	264,047	134,745	330,315	19,484	1,035	20,608	1,247,972	1,247,972	1,953
FY85	1	596	505,184	274,444	184,648	397,650	-25,593	1,744	17,008	1,355,085	1,355,085	2,274
VARIANCE												
FY86-FY85	0	43	-27,446	-10,397	-49,903	-67,335	45,077	-709	3,600	-107,113	-107,113	-321
FY86-FY85/FY85	0.00%	7.21%	-5.43%	-3.79%	-27.03%	-16.93%	-176.13%	-40.65%	21.17%	-7.90	-7.90%	-14.10%
HH-65A FY86	22.52	12,585	13,197,798	1,508,067	2,991,239	7,791,191	2,498,429	736,931	551,118	29,274,773	1,299,946	2,326

HH 65A

AIRCRAFT REPORT
FY 87

AIR STATION	OPFAC	NUMBER OF A/C ASSIGN.	FLT HRS	PERSON. COST	FUEL OG-3?	MAINT OG-30	A/C PROG. OG-41	ELEC. PROG. OG-42	SHORE & OTHER COST	Indirect Costs	TOTAL
Brooklyn	20124	5.14	2864	2713564	201157	1514872			923043		5350633
Cape May	20125	2.14	1148	1415850	54797	291564					1802211
Savannah	20135	1.74	1110	1289819	94372	444944			41057		2239274
Miami	20149	5.42	4428	3354937	376450	1280657		3446	283657		5299147
Clearwater	20150										
Borinquen	20235	4.00	2274	2480237	193335	2001129		4430	484122		5565253
Corpus christi	20245	3.60	1765	1583921	150060	240384			10463		1785030
New Orleans	20250	5.46	3265	3012834	271590	381290		5281	265210		3945155
San Diego	20170	3.76	2058	2076524	174971	424694		2062	101093		2779344
Los angeles	20253			15677							15677
Astoria	20175	.63	253	767030	21510	173445			34254		996239
Barbers point	20255	1.40	396	1005704	33667	315328	6018	11790	74859		1436721
Total Direct Costs			19030	21115449	1617909	7037391	6018	16959	2322958		31116684
Direct Support Facility	20135						10055491	2646578			10702069
Indirect Costs										16828541	16828541
Grand Total				21115449	1617909	7037191	10061509	2663537	2322958	16828541	58647294

HU25A

AIRCRAFT REPORT

FY 87

AIR STATION	OPFAC	NUMBER OF A/C ASSIGN.	FLT HRS	PERSON. COST	FUEL	MAINT	A/C PROG.	ELEC. PROG.	SHORE & OTHER COST	Indirect Costs	TOTAL
Cape Cod	20115	5.46	3063	4800448	1080959	918343		57593	70443		6928281
Eliz City	20130	2.42	1481	622292	425432	60790	32749	148	32		1141373
Miami	20140	6.38	4518	4211254	1297840	1144266		3887	319894		7327143
Borinquen	20235	2.08	1278	246218	367118	248684		551	85264		467837
Corpus Christi	20245	3.11	1611	2051615	460775	231162			14254		2735806
Astoria	20145	2.40	1024	743462	294154	249762			49325		1336703
San Diego	20170	2.97	2028	1519580	582563	376391		1827	89595		2869956
Sacramento	20290	2.66	1656	1962622	475710	237233					2675565
Total Direct Costs			17359	16507626	4986551	3766631	32749	64306	624811		25982674
Direct Support Facility	20925						19072226	3159334			22231560
Indirect Costs										13203591	13203591
Grand Total				16507626	4986551	3766631	19104975	3223640	624811	13203591	61417825

HH65A

Aircraft Report
FY88

Air Stations	OPFAC	Number of A/C Assign	FLT HRS	Personnel Cost	Fuel OG 30	Maint OG 20	A/C Programs OG 41	Elect Program OG 42	Shore + Other Cost	Indirect Cost	Total
Brooklyn	20120	500	2351	2771873	181215	1225976			276815		4455879
Cape May	20125	303	1593	1452099	122788	334355			875		1910117
Savannah	20135	400	2284	1926731	176050	597677			24886		2725344
Miami	20140	875	4416	4312373	340385	1020891		4413	188285		5866347
Borinquen	20235	401	2365	2001051	182294	1513931			432557		4129833
Corpus Christi	20245	300	1697	1581064	130805	232879			6275		1951023
New Orleans	20250	516	3045	3027499	234709	453949		23634	28869		3770660
San Diego	20170	402	2113	2226962	162870	397962			45864		2833658
Los Angeles	20253	274	1733	1552553	133579	150615		88141	11687		1936575
Arcata	20285	155	833	883061	64208	176313			1909		1125491
Port Angeles	20190	84	431	471333	33221	104009			46299		654862
Astoria	20195	300	1431	1443089	110301	661351			27188		2241929
North Bend	20276	35	84	155451	6475	6300			1171		169397
Barbers Point	20255	300	1609	1769813	124022	801845		7016	32442		2735138
Kodiak	20200	287	605	1365584	46633	75703			31581		1519501
Total Air Stations		5132	26590	26940536	2049555	7753756		125204	1156903		28025754
Direct Support Facility							20897296	2172095			23069391
Indirect Costs										19323829	19323829
Grand Total		5132	26590	26940536	2049555	7753756	20897296	2297299	1156703	19323829	70418974

HU 25

Air Craft Report
FY88

Air Stations	OPFAC	Number of A/C Assign	FLT HRS	Personnel Cost	Fuel OG 30	Maint OG 30	A/C Program OG41	Elec Program OG 42	Shore & Other Cost	Indirect Cost	Total
Cape Cod	20115	598	3878	4913627	937700	770450			116304		6738081
Miami	20140	791	5784	4488388	1398571	1018360		5850	249587		7161256
Corpus Christi	20245	278	2097	1712819	507055	286801			7670		2514345
San Diego	20170	248	2093	1847042	506087	359925			45864		2808918
Sacramento	20290	144	892	1029982	215686	123374			172		1369214
Astoria	20195	225	1113	1279720	269123	268477			21362		1838682
Total Air Stations		2354	15857	15321578	3834222	2827887		5850	440959		22430496
Direct Support Facility							29956187	96552			30052739
Indirect Costs										12315293	12315293
Grand Total		2354	15857	15321578	3834222	2807887	29956187	102402	440959	12315293	44798528

OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1983

DIST	VESSEL	OPFAC	MILITARY PAY AND ALLOWANCES $ OFFICERS	$ ENLISTED	OPERATING MAINTENANCE COSTS $ FUEL	$ ALL OTHER	ELECTRONICS $ PROGRAM	VESSEL $ PROGRAM	OTHER $ COSTS	$ TOTAL
****	WMEC 230									
13	STORIS	12701								
17	STORIS	12701	279,750	1,125,838	223,237	436,495	9,077	220,775		2,295,172
****	WMEC 213									
05	ESCAPE	12120				344		25,534		25,878
07	ESCAPE	12120	284,092	1,186,121	438,472	271,223	45,434	666,617		2,889,959
08	ACUSHNET	12201	286,957	1,171,414	150,384	354,009	119,219	834,926		2,916,909
13	YOCONA	12202	185,111	705,562	138,579	238,577	55,213	297,055	5,517	1,625,614
17	YOCONA	12202	27,085	81,675	17,755	2,154	368	169		129,206
****	TOTAL FOR WMEC 213		783,245	3,144,772	743,190	866,307	220,234	1,824,301	5,517	7,587,566
****	AVERAGE 3 VESSELS		281,082	1,048,257	247,730	288,769	73,411	608,100	1,839	2,529,189
****	WMEC 210									
01	ACTIVE	12104	229,916	855,321	280,450	344,823	3,764	252,501		1,946,775
01	VIGILANT	12103	279,209	1,069,717	153,129	323,651	11,630	207,582		2,044,918
01	DECISIVE	12115			4,879	35,656		11,867		52,402
03	ALERT	12118		81,821	199,294	264,976	61,008	165,219		772,318
03	VIGOROUS	12113		148,227	243,860	239,035	69,924	212,951		913,997
07	DAUNTLESS	12110	284,868	984,218	208,577	226,041	14,789	398,590		2,117,081
07	STEADFAST	12109	317,137	1,073,472	274,918	234,518	10,051	861,661		2,771,757
07	COURAGEOUS	12108	295,924	1,080,285	314,305	283,758	23,394	642,701		2,640,365
07	DECISIVE	12115	317,089	1,059,045	274,198	273,061	10,550	648,007		2,581,930
07	DILIGENCE	12102	283,739	1,079,953	270,269	295,287	6,088	375,589		2,310,903
07	RELIANCE	12101	261,536	888,791	223,269	250,995	19,972	76,001		1,700,564
08	DURABLE	12114	285,320	908,813	277,224	335,701	5,070	491,500		2,303,628
08	VALIANT	12107	312,796	1,077,710	226,855	310,722	1,283	373,578		2,302,924
08	DEPENDABLE	12112	313,039	1,081,763	29,058-	420,641	8,247	178,945		1,973,579
11	VENTUROUS	12111	313,461	998,004	258,576	500,603	22,069	258,567		2,349,280
13	RESOLUTE	12106	327,885	1,044,871	228,518	283,929	62,416	153,294		2,080,711
13	CONFIDENCE	12105	20,690	66,373	565	8,300		1,530	702	98,160
17	CONFIDENCE	12105	252,495	923,019	184,953	516,933	21,521	485,085		2,384,006
60	VIGOROUS	12113	297,056	878,628						1,175,684
77	ALERT	12118	288,808	890,570				470,000		1,649,376
****	TOTAL FOR WMEC 210		4,680,744	16,168,601	3,574,781	5,128,608	351,754	6,265,168	702	36,170,358
*****	AVERAGE 18 VESSELS		292,547	1,010,538	223,424	320,538	21,985	391,573	44	2,260,647
****	WMEC 270									
05	TAMPA	11502		1,030	75	2,323	53			3,481
05	BEAR	11501	258,707	1,029,346	132,840	207,241	3,885	33,034		1,665,053
****	TOTAL FOR WMEC 270		258,707	1,030,376	132,915	209,584	3,938	33,034		1,668,534
****	AVERAGE 2 VESSELS		129,354	515,188	66,458	104,782	1,969	16,517		834,267

OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1984

DIST	VESSEL	OPFAC	MILITARY PAY AND ALLOWANCES $ OFFICERS	MILITARY PAY AND ALLOWANCES $ ENLISTED	OPERATING MAINTENANCE COSTS $ FUEL	OPERATING MAINTENANCE COSTS $ ALL OTHER	$ ELECTRONICS PROGRAM	$ VESSEL PROGRAM	$ OTHER COSTS	$ TOTAL
••••	WMEC 230									
13	STORIS	12701		66,756		20				66,778
17	STORIS	12701	288,627	1,196,244	179,284	300,082	41,406	755,474		2,761,117
••••	WMEC 213									
07	ESCAPE	12120	304,021	1,167,513	249,169	353,848	48,737	368,904	6,212	2,498,404
08	ACUSHNET	12201	239,239	1,238,190	213,044	272,620	82,999	331,373	35,373	2,412,838
13	**YOCONA	12202		57,376	827-	45,444	2,186	21,763		125,942
17	**YOCONA	12202	345,608	1,249,318	181,952	267,358	66,505	55,540		2,166,281
••••	TOTAL FOR WMEC 213		888,868	3,712,397	643,338	939,270	200,427	777,580	41,585	7,203,485
••••	AVERAGE 3 VESSELS		296,289	1,237,466	214,446	313,090	66,809	259,193	13,862	2,401,155
••••	WMEC 210									
01	ACTIVE	12104	251,161	989,222	198,689	246,982	19,428	102,060		1,807,542
01	VIGILANT	12103	292,116	1,182,639	239,047	258,829	52,120	361,244	1,511	2,387,506
03	ALERT	12116		99,743	284,189	269,553	32,929	57,897	17,407	761,718
03	VIGOROUS	12113		106,970	205,476	227,338	12,322	303,530	10,913	866,549
07	DECISIVE	12115	300,988	992,200	279,812	248,585	10,721	92,137	2,356	1,926,797
07	DAUNTLESS	12110	270,529	1,063,546	217,795	215,198	4,596	221,144	23,263	2,016,071
07	STEADFAST	12109	322,088	1,131,047	162,419	269,884	15,931	1,112,982	4,141	3,018,492
07	COURAGEOUS	12108	291,544	933,155	227,912	284,397	88,442	394,523	19,278-	2,180,695
07	DILIGENCE	12102	286,689	956,302	99,501	292,526	21,859	410,665	12,765	2,080,307
07	RELIANCE	12101	339,339	1,162,857	346,230	286,269	23,946	582,765		2,741,406
08	VALIANT	12107	230,908	968,110	256,334	304,163	15,785	86,110	11,004	1,872,414
08	DEPENDABLE	12112	205,943	865,999	271,235	295,804	7,815	124,812	15,304	1,786,912
08	DURABLE	12114	284,723	1,083,564	220,988	317,524	14,903	363,089	3,455	2,288,246
11	VENTUROUS	12111	238,925	765,904	157,804	371,394	27,354	596,988	346,501	2,504,870
13	RESOLUTE	12106	315,474	1,016,840	204,618	308,050	12,936	351,072	10,197	2,219,187
13	CONFIDENCE	12105	232,273	831,596	253,531	276,990	3,329	431,893	4,386	2,033,998
17	CONFIDENCE	12105				168,976		2,477-		166,499
60	VIGOROUS	12113	283,980	923,487						1,207,467
77	ALERT	12116	318,894	894,489						1,213,383
••••	TOTAL FOR WMEC 210		4,465,572	15,967,670	3,625,580	4,642,462	344,416	5,590,434	443,925	35,080,059
••••	AVERAGE 16 VESSELS		279,098	997,979	226,599	290,154	21,526	349,402	27,745	2,192,504
••••	WMEC 270									
05	NORTHLAND	11504		19,889	38,143	65,665	484		8,404	132,585
05	HARRIET LANE	11503		76,608	131,496	89,357	3,802	9,128		310,391
05	TAMPA	11502	332,405	1,373,511	182,398	223,780	3,046	9,025		2,124,165
05	BEAR	11501	358,405	1,539,288	166,702	336,840	19,529	75,321		2,496,085
••••	TOTAL FOR WMEC 270		690,810	3,009,296	518,739	715,642	26,861	93,474	8,404	5,063,228
••••	AVERAGE 4 VESSELS		172,703	752,324	129,685	178,911	6,715	23,369	2,101	1,265,807

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OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1985

DIST	VESSEL	OPFAC	MILITARY PAY AND ALLOWANCES $ OFFICERS	$ ENLISTED	OPERATING MAINTENANCE COSTS $ FUEL	$ ALL OTHER	ELECTRONICS $ PROGRAM	VESSEL $ PROGRAM	OTHER $ COSTS	$ TOTAL
****	WMEC 230									
17	STORIS	12701	403,971	1,262,647	294,756	205,266	21,240	7,469		2,195,349
****	WMEC 213									
07	ESCAPE	12120	307,896	1,104,511	93,432	405,723	42,338	3,189,658	35-	5,143,523
08	ACUSHNET	12201	222,891	877,863	196,076	308,926	8,943	844,968	120-	2,459,547
13	YOCONO	12202		13,688-		2,728		7,423		3,537-
17	YOCONO	12202	338,865	1,330,126	118,241	284,464	101,008	402,735		2,575,439
****	TOTAL FOR WMEC 213		869,652	3,298,812	407,749	1,001,841	152,289	4,444,784	155-	10,174,972
****	AVERAGE 3 VESSELS		289,884	1,099,604	135,916	333,947	50,763	1,481,595	52-	3,391,657
****	WMEC 210									
01	ACTIVE	12104		828			4,583			5,411
01	VIGILANT	12103	355,315	1,117,020	133,501	425,330	60,728	513,320	1,317-	2,603,897
03	ALERT	12116	91,626	253,484	238,088	347,358	2,815	136,412		1,069,783
03	VIGOROUS	12113	367,414	1,158,638	169,818	318,976	1,507	181,597	2,029-	2,195,921
07	DECISIVE	12115	304,999	996,341	224,212	182,882	5,273	120,027	124-	1,833,610
07	DAUNTLESS	12110	331,883	1,008,341	307,344	162,651	4,409	29,455	985-	1,843,098
07	STEADFAST	12109	311,672	1,007,706	361,490	276,330	45,438	163,445		2,166,081
07	COURAGEOUS	12108	305,456	1,126,567	320,833	231,209	87,849	473,249		2,545,163
07	DILIGENCE	12102	321,558	1,100,310	286,852	282,063	2,373	303,348		2,296,504
07	RELIANCE	12101	298,638	1,036,722	310,193	295,096	1,863	29,719	63-	1,972,168
08	VALIANT	12107	337,751	1,066,390	254,485	298,219	4,275	401,314		2,362,434
08	DURABLE	12114	321,007	1,117,287	319,061	379,725	4,000	11,648		2,152,728
08	DEPENDABLE	12112	353,888	1,161,572	240,810	317,724	6,030	805,220	284	2,885,528
11	VENTUROUS	12111	375,955	1,094,339	193,755	336,365	134,194	238,869	117-	2,373,360
13	RESOLUTE	12106	336,879	1,052,826	227,502	196,647	4,225	311,686	893	2,130,658
13	CONFIDENCE	12105	337,959	1,027,068	192,717	161,220	16,464	269,320	54	2,004,802
17	CONFIDENCE	12105				15,091	287	5,889		21,267
77	ALERT	12116	194,712	674,093						868,805
****	TOTAL FOR WMEC 210		4,946,712	15,999,532	3,780,661	4,226,886	386,313	3,994,518	3,404-	33,331,218
****	AVERAGE 16 VESSELS		309,170	999,971	236,291	264,180	24,145	249,657	213-	2,083,201
****	WMEC 270									
01	SPENCER	11505		1,154						1,154
05	NORTHLAND	11504	416,964	1,541,916	61,173	294,974	1,140	16,291	32-	2,332,426
05	HARRIET LANE	11503	457,613	1,418,362	85,891	390,132	1,353	48,562	18-	2,401,895
05	TAMPA	11502	426,232	1,441,855	219,455	412,177	3,946	119,042		2,622,707
05	BEAR	11501	303,530	1,391,439	445,425	452,409	40,374	419,597		3,052,774
****	TOTAL FOR WMEC 270		1,604,339	5,794,726	811,944	1,549,692	46,813	603,492	50-	10,410,956
****	AVERAGE 5 VESSELS		320,868	1,158,945	162,389	309,938	9,363	120,698	10-	2,082,191

OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1986

DIST	VESSEL	OPFAC	MILITARY PAY AND ALLOWANCES $ OFFICERS	$ ENLISTED	OPERATING MAINTENANCE COSTS $ FUEL	$ ALL OTHER	ELECTRONICS $ PROGRAM	VESSEL $ PROGRAM	OTHER $ COSTS	$ TOTAL
****	WMEC 230									
17	WMEC STORIS	12701	321,231	1,018,403	13,288	89,926	3,775-	37,395		1,476,468
****	WMEC 213									
07	ESCAPE	12120	358,097	1,329,922	132,669	439,107	477	350,096		2,610,368
08	ACUSHNET	12201	310,075	1,271,506	165,169	356,542		172,512		2,275,804
17	YOCONO	12202	306,142	1,269,822	124,481	469,761	32,210	210,598		2,413,014
****	TOTAL FOR WMEC 213		974,314	3,871,250	422,319	1,265,410	32,687	733,206		7,299,186
****	AVERAGE 3 VESSELS		324,771	1,290,417	140,773	421,803	10,896	244,402		2,433,062
****	WMEC 210									
01	VIGILANT	12103	412,562	1,381,425	132,229	366,407	29,780	131,737		2,454,140
03	ALERT	12116	334,048	1,222,893	186,578	432,410	15,959	579,751		2,771,639
03	VIGOROUS	12113	378,176	1,214,066	161,939	247,871	5,882	398,824		2,406,758
07	DAUNTLESS	12110	411,202	1,231,829	205,750	358,050	50	566,297		2,773,178
07	STEADFAST	12109	378,930	1,295,059	171,925	322,775	1,036	521,181		2,690,906
07	COURAGEOUS	12108	373,691	1,254,219	235,075	353,203	1,484	52,790		2,270,462
07	DECISIVE	12115	368,990	1,261,455	224,289	368,078	270	666,589		2,889,671
07	DILIGENCE	12102	365,842	1,333,255	224,331	402,125	229	125,496		2,451,278
07	RELIANCE	12101	374,441	1,370,415	117,041	270,229	3,527	150,149		2,285,802
08	DURABLE	12114	385,026	1,359,999	207,847	349,422	5,808	732,955		3,041,057
08	VALIANT	12107	366,525	1,255,554	153,599	365,607		734,559		2,875,844
08	DEPENDABLE	12112	379,453	1,313,404	199,571	371,253	6,603	263,009		2,533,293
11	VENTUROUS	12111	419,453	1,243,122	142,397	179,067	12,958	398,296	506	2,395,799
13	RESOLUTE	12106	343,563	1,141,377	139,965	336,524	15,744	194,271		2,171,444
13	CONFIDENCE	12105	329,062	1,120,910	178,137	321,415	2,040	59,161		2,010,725
****	TOTAL FOR WMEC 210		5,620,964	18,998,982	2,680,673	5,044,436	101,370	5,575,065	506	38,021,996
****	AVERAGE 15 VESSELS		374,731	1,266,599	178,712	336,296	6,758	371,671	34	2,534,800
****	WMEC 270									
01	************	11508		8,733						8,733
01	WMEC ESCANABA	11507	15,953	37,060						53,013
01	WMEC SENECA	11506	118,275	160,037	44,888	18,541		59,100		400,841
01	WMEC SPENSER	11505	299,434	1,187,370	59,902	188,381	60,398	64,119		1,859,604
05	WMEC NORTH'LAND	11504	516,242	1,620,675	198,078	547,840	184,451	133,093		3,200,379
05	WMEC HARET LANE	11503	504,436	1,793,761	340,212	618,813	110,821	318,741		3,686,784
05	WMEC TAMPA	11502	540,377	1,734,788	550,850	766,978	116,382	367,550		4,076,925
05	WMEC BEAR	11501	476,795	1,623,421	823,494	695,758	65,635	292,497		3,977,600
****	TOTAL FOR WMEC 270		2,471,512	8,165,845	2,017,424	2,836,311	537,687	1,235,100		17,263,879
****	AVERAGE 8 VESSELS		308,939	1,020,731	252,178	354,539	67,211	154,388		2,157,985

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OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1986

DIST	VESSEL	OPFAC	MILITARY PAY AND ALLOWANCES $ OFFICERS	$ ENLISTED	OPERATING MAINTENANCE COSTS $ FUEL	$ ALL OTHER	$ ELECTRONICS PROGRAM	$ VESSEL PROGRAM	$ OTHER COSTS	$ TOTAL
07	OCRACOKE	13407	20,941	43,959	10,823	2,515				78,238
07	NUNIVAK	13406	26,762	92,238	5,470	19,596				144,066
07	MONHEGAN	13405	20,655	88,949	11,790	8,521				129,915
07	MAUI	13404	25,223	140,381	22,654	18,675		1,565		208,498
07	MATAGORDA	13403	40,402	126,841	26,037	14,199		1,365		208,844
07	MANITOU	13402	43,720	150,175	60,262	25,828		2,154		282,139
07	FARALLON	13401	60,102	181,587	40,045	25,920		1,454		309,108
****	TOTAL FOR WPB 110		263,950	898,465	187,227	119,226		6,538		1,475,406
****	AVERAGE 8 VESSELS		32,994	112,308	23,403	14,903		817		184,426

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					Fuel	Other	
05	WPB AQUIDNECK	13409	9.743	13.578		3.703	27.024
07	WPB VASHIN	13408	16.402	60.757	10.146	269	87.574

OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1987

			MILITARY PAY AND ALLOWANCES		OPERATING MAINTENANCE COSTS		ELECTRONICS	VESSEL	OTHER	
DIST	VESSEL	OPFAC	$ OFFICERS	$ ENLISTED	$ FUEL	$ ALL OTHER	$ PROGRAM	$ PROGRAM	$ COSTS	$ TOTAL
****	WMEC 230									
11	WMEC STORIS	12701	346,018	1,455,752	85,715	315,286	45,346	73,586	2,557	2,324,260
****	WMEC 213									
01	ESCAPE	12120	335,492	1,479,733	161,651	539,067	27,366	931,668		3,474,977
01	ACUSHNET	12201	327,821	1,391,216	154,121	359,622	11,118	368,244		2,612,142
11	YOCONA	12202	363,627	1,522,501	131,324	278,814	81,789	69,687		2,447,742
****	TOTAL FOR WMEC 213		1,026,940	4,393,450	447,096	1,177,503	120,273	1,369,599		8,534,861
****	AVERAGE 3 VESSELS		342,313	1,464,483	149,032	392,501	40,091	456,533		2,844,954
****	WMEC 210									
01	ALERT	12116	376,237	1,292,317	141,595	281,446	18,712	141,284		2,251,591
01	DILIGENCE	12102	401,877	1,538,560	465,659	411,347	62,893	593,269		3,173,605
01	VIGILANT	12103	386,898	1,431,778	131,752	333,511	5,578	352,781		2,642,298
01	VALIANT	12107	365,117	1,393,206	108,793	282,876	34,810	43,339		2,228,141
01	DECISIVE	12115	388,671	1,317,899	193,510	352,152	36,461	373,814		2,662,507
01	DEPENDABLE	12112	388,980	1,400,000	130,001	286,661	20,939	475,559		2,702,140
01	VIGOROUS	12113	374,807	1,242,329	219,922	245,112	979	325,377		2,408,526
01	STEADFAST	12109	387,603	1,365,998	246,582	394,885	28,154	597,009		3,020,231
01	DAUNTLESS	12110	436,784	1,378,257	240,652	389,381	23,206	699,348		3,167,628
07	**COURAGEOUS	12108	161,743	603,114	151,514	217,105	12,595	36,647		1,182,724
07	**RELIANCE	12101	234,729	825,831	148,828	299,301	23,152	113,738	876	1,646,455
08	DURABLE	12114	1,710	46,651	24,589	49,016	2,917	3,235		128,118
11	VENTUROUS	12111	379,049	1,257,054	177,672	365,727	56,518	202,632		2,438,652
11	ACTIVE	12104	222,044	878,869	90,062	128,606	4,532	40,419		1,364,532
11	RESOLUTE	12106	389,140	1,224,996	100,484	323,266	5,739	523,967	243	2,567,835
13	CONFIDENCE	12105	120,039	427,211	27,509	185,526		27,973		788,258
17	CONFIDENCE	12105				176				176
****	TOTAL FOR WMEC 210		5,015,434	17,624,070	2,299,124	4,546,094	337,185	4,550,391	1,119	34,373,417
****	AVERAGE 16 VESSELS		313,465	1,101,504	143,695	284,131	21,074	284,399	70	2,148,339
****	WMEC 270									
01	WMEC BEAR	11501	492,388	1,788,623	325,041	919,743	141,420	679,357	753	4,347,325
01	WMEC TAMPA	11502	492,864	1,791,568	271,407	697,071	209,272	335,738	753	3,798,673
01	WMEC HARET LANE	11503	489,709	1,668,714	354,003	670,873	146,970	62,500	753	3,393,522
01	WMEC NORTHLAND	11504	511,918	1,759,758	309,844	861,592	207,312	420,713	753	4,071,890
01	WMEC SPENSER	11505	524,780	1,711,015	216,602	529,449	13,112	174,924		3,169,882
01	WMEC SENECA	11506	471,636	1,584,843	126,622	592,773	10,042	143,557		2,929,473
01	WMEC ESCANABA	11507	404,331	1,100,946	111,324	311,217	4,000	59,993		1,991,811
01	TAHOMA	11508	124,733	376,139	24,500	81,475				606,847
01	************	11509	40,315	147,434						187,749
11	************	11510	4,620	1,943						6,563
****	TOTAL FOR WMEC 270		3,557,294	11,930,983	1,739,343	4,664,193	732,128	1,876,782	3,012	24,503,735
****	AVERAGE 10 VESSELS		355,729	1,193,098	173,934	466,419	73,213	187,678	301	2,450,374

OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1987

DIST	VESSEL	OPFAC	MILITARY PAY AND ALLOWANCES		OPERATING MAINTENANCE COSTS		ELECTRONICS	VESSEL	OTHER	
			$ OFFICERS	$ ENLISTED	$ FUEL	$ ALL OTHER	$ PROGRAM	$ PROGRAM	$ COSTS	$ TOTAL
****	WPB 110 CLASS									
01	SANIBEL	13412	57,569	213,805	63,547	64,085	9,811	2,500		411,317
03	MATINICUS	13415	44,505	148,679	21,385	28,116				242,685
07	NANTUCKET	13416	21,656	81,895	25,683	6,986		376		136,596
07	FARALLON	13401	89,335	290,051	97,770	47,705		20,840		545,701
07	MANITOU	13402	78,157	283,171	169,476	49,921		6,830		587,555
07	MATAGORDA	13403	87,723	302,197	94,886	48,205		40,030		573,041
07	MAUI	13404	74,516	303,813	143,743	48,848	30	4,159		575,109
07	MONHEGAN	13405	63,379	258,252	175,495	63,938		14,250		575,314
07	NUNIVAK	13406	71,559	260,006	214,672	76,941		399		623,577
07	OCRACOKE	13407	63,165	261,654	107,299	59,238		450		491,806
07	WPB VASHIN	13408	73,604	255,973	134,065	54,894		690		519,226
11	EDISTO	13413	50,306	161,618	59,789	47,569		673		319,955
11	SAPELO	13414	16,754	60,370						77,124
12	SAPELO	13414	30,964	78,973	46,092	35,483	2,992	671		195,175
17	WPB MUSTANG	13410	79,386	333,659	66,680	79,464	14,048	41,561	1,200	615,998
17	WPB NAUSHON	13411	88,139	345,791	62,887	80,773	2,979	5,887		586,456
****	TOTAL FOR WPB 110		990,717	3,639,907	1,483,469	792,166	29,860	139,316	1,200	7,076,635
****	AVERAGE 15 VESSELS		66,048	242,660	98,898	52,811	1,991	9,288	80	471,776

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OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1988

DIST	VESSEL	OPFAC	MILITARY PAY AND ALLOWANCES $ OFFICERS	$ ENLISTED	OPERATING MAINTENANCE COSTS $ FUEL	$ ALL OTHER	ELECTRONICS $ PROGRAM	VESSEL $ PROGRAM	OTHER $ COSTS	$ TOTAL
****	WMEC 230									
11	WMEC STORIS	12701	364,941	1,495,205	74,971	213,769	14,761	271,552		2,435,199
****	WMEC 213									
01	ACUSHNET	12201	326,387	1,416,920	145,752	470,476	3,644	349,879		2,713,058
01	ESCAPE	12120	346,179	1,407,063	60,915	390,281	11,506	324,733		2,540,677
11	YOCONO	12202	393,379	1,579,170	146,458	223,422	7,661	413,359		2,763,449
****	TOTAL FOR WMEC 213		1,065,945	4,403,153	353,125	1,084,179	22,811	1,087,971		8,017,184
****	AVERAGE 3 VESSELS		355,315	1,467,718	117,708	361,393	7,604	362,657		2,672,395
****	WMEC 210									
01	ALERT	12116	379,180	1,268,166	109,706	313,150	615	393,247		2,464,064
01	DECISIVE	12115	408,910	1,438,045	94,356	336,010	6,252	43,130		2,326,703
01	DURABLE	12114	111,288	424,054		18,831-				516,511
01	VIGOROUS	12113	363,327	1,207,267	24,490	283,950	87	134,716		2,013,837
01	DEPENDABLE	12112	378,657	1,401,410	138,191	252,728	306	28,993		2,200,285
01	DAUNTLESS	12110	415,093	1,372,034	189,704	189,623	11,040	21,866		2,199,360
01	STEADFAST	12109	414,931	1,486,320	99,112	295,791	7,005	94,452	183	2,397,794
01	VALIANT	12107	396,021	1,453,708	166,369	329,078	6,195	220,057		2,571,428
01	CONFIDENCE	12105	142,691	533,478	8,982	32,762				717,913
01	VIGILANT	12103	426,801	1,599,117	144,260	243,768	8,171	334,357		2,756,474
01	DILIGENCE	12102	413,006	1,375,898	78,358	432,974	2,085	541,357		2,843,678
07	**RELIANCE	12101			15,422-	6,524		10,877		1,979
07	**COURAGEOUS	12108	4,101	16,445	10,065-	14,985				25,466
11	VENTUROUS	12111	412,608	1,378,386	97,843	230,472	287	548,244	750	2,668,590
11	ACTIVE	12104	375,356	1,347,133	126,781	193,116	2,006	252,223		2,296,615
11	RESOLUTE	12106	385,806	1,365,933	104,732	202,719	30,954	399,660		2,489,804
32	**RELIANCE	12101								
32	**COURAGEOUS	12108		1,699						1,699
****	TOTAL FOR WMEC 210		5,027,776	17,669,093	1,357,397	3,338,819	75,003	3,023,179	933	30,492,200
****	AVERAGE 16 VESSELS		314,236	1,104,318	84,837	208,676	4,688	188,949	58	1,905,763
****	WMEC 270									
01	************	11511	12,100	32,874						44,974
01	PHETIS	11510	310,265	803,233	12,148	7,535		10,000		1,143,181
01	CAMPBELL	11509	349,180	1,447,893	27,043	608,070				2,432,186
01	TAHOMA	11508	392,699	1,229,773	114,842	696,637		54,993		2,488,944
01	WMEC ESCANABA	11507	521,999	1,594,483	211,950	683,176		26,824		3,038,432
01	WMEC SENECA	11506	536,057	1,778,329	215,881	770,502	1,786	51,835		3,354,390
01	WMEC SPENSER	11505	512,660	1,760,181	234,934	631,013	3,591	358,316		3,500,695
01	WMEC NORTHLAND	11504	509,210	1,827,506	217,548	574,961	76,748	21,545		3,227,518
01	WMEC HARET LANE	11503	513,071	1,698,754	640,217	765,632	24,612	294,840		3,937,126
01	WMEC TAMPA	11502	505,028	1,801,708	202,412	532,342	9,223	105,220		3,155,933
01	WMEC BEAR	11501	521,378	1,791,096	294,932	627,769	5,428	662,949		3,903,552
11	************	11511	19,840	44,975						64,815
11	************	11513		3,036						3,036
11	************	11512	2,875							2,875

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                                 Mil Pay                  OG30
 32  ************       11511                       Fuel      26,731      OG42       OG45                      26,731
                                                              Other
**** TOTAL FOR WMEC 270        4,706,362   15,813,841   2,171,907   5,924,368     121,388   1,586,522                30,324,388
**** AVERAGE  13 VESSELS         362,028    1,216,449     167,070     455,721       9,338     122,040                 2,332,645
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OPERATING COSTS OF COAST GUARD CUTTERS
BY CLASS OF UNIT AND MAJOR ITEMS OF COST
4TH QTR FISCAL YEAR 1988

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DIST	VESSEL	OPFAC	MILITARY PAY AND ALLOWANCES $ OFFICERS	$ ENLISTED	OPERATING MAINTENANCE COSTS $ FUEL	$ ALL OTHER	$ ELECTRONICS PROGRAM	$ VESSEL PROGRAM	$ OTHER COSTS	$ TOTAL
****	WPB 110 CLASS									
01	************	13426		4,728						4,728
01	SANIBEL	13412	73,577	275,030	72,166	67,258		19,018		507,049
05	MATINICUS	13415	78,133	305,903	52,532	90,732		187,900		715,200
07	ATTU	13417	41,043	155,760	56,131	29,446				282,380
07	NANTUCKET	13416	70,189	268,218	83,048	38,947				460,402
07	WPB VASHIN	13408	80,617	291,665	57,766	37,863				467,911
07	OCRACOKE	13407	69,721	281,857	80,693	61,267		6,060		499,598
07	NUNIVAK	13406	81,062	283,982	107,214	39,761		79,630		591,649
07	MONHEGAN	13405	67,652	252,130	65,035	38,520		151,890		575,227
07	MAUI	13404	84,075	261,561	71,017	42,361		5,518		464,532
07	MATAGORDA	13403	75,828	272,074	47,835	29,871				425,608
07	MANITOU	13402	73,202	289,808	88,304	42,942		4,808		499,064
07	FARALLON	13401	326,809	280,017	36,480	31,012		213,061		887,379
07	************	13425	10,064	5,822						15,886
07	************	13424	11,302	40,164						51,466
07	************	13423	20,323	53,458						73,781
07	CHANDELEUR	13419	44,303	131,508	8,155	22,388				206,354
07	BARANOF	13418	66,434	169,344	20,415	21,675				277,868
08	************	13420	34,690	126,358	20,179	22,989				204,216
08	************	13421	33,083	104,061	12,707	16,026				165,877
08	WPB NAUSHON	13411	107,316	402,422	50,978	80,356	1,367	10,343		652,782
11	EDISTO	13413	76,542	350,378	13,672	60,751		144,876		646,219
11	SAPELO	13414	70,439	305,105	6,909	133,791		55,568		571,812
13	************	13422	17,672	45,845	7,700	12,932				84,149
17	WPB MUSTANG	13410	93,376	368,618	42,317	122,554	2,907	3,542		633,314
33	CHANDELEUR	13419						3,989		3,989
****	TOTAL FOR WPB 110		1,707,452	5,325,816	1,001,253	1,043,442	4,274	886,203		9,968,440
****	AVERAGE 25 VESSELS		68,298	213,033	40,050	41,738	171	35,448		398,738

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11/27/84                            A I R C R A F T

                                ANNUAL EMPLOYMENT SUMMARY
                      FISCAL YR 1984   ABSTRACT OF OPERATIONS    FISCAL YR 1984

COAST GUARD TYPE TOTALS
                                      HU25A

                                   ----LBRH-----                                     --READINESS---
                 MSSNS      SORT      DAY      DUTY      SBOH      SBRH    EMPHRS     HIGH      OTHER

CVS                  1         1        2                                       2      740
RBS
SAR               1214      1338     1563      1700                          3357    38703
DOM ICE             23        34       42        24                            76
POLAR OPS            7         7       19         1                            23
MSA                  9        11       16        11                            41
ELT FISH O         367       323      600       255                          1195
ELT FISH F         114        57      120        87                           410     2900
ELT DRUGS         1174      1332     2323      1426                          4592     2900
ELT OTHER          354       365      565       374                          1338
MIL OPS             12        39       51        28                            80
MIL PREP             7        11       12        19                            31
OP TRA            3724      3843     5269      2823                          8367
CADET OC            62         8       10         5                           142
A TO N              22        23       38        14                            58
RAD NAV              1         2        5         2                             7
MER                 46        43       60        24                           136
COOP FED            39        52       75        24                           108
COOP STATE           1         1        1                                       2
COOP LOCAL
PIA                 73        93       48        69                           136
MISC               110       166      147       113                           267
TEST               272       270      238        96                           336
FERRY               61        81      132        51                           186
PES PORT             6         5        6         1                             7
PES COAST           59        11       34        14                           143
PES OFFSH          122        66      161        68                           500

TOTALS            7880      8182    11537      7229                         21540    45243     77623

NOT OPERATIONAL READY HOURS *NOR*                        ---------------UNABLE TO MEET READINESS REQUIREMENTS------------
       DAY       50108                                   OCCURRENCE    DAY        140          HOURS    DAY        1337
       DUTY     126345                                                 DUTY       218                   DUTY       1977
       TOTAL    176453                                                 TOTAL      358                   TOTAL      3314

AVG NO A/C ASSIGNED              33.32
AVG NO SPARE A/C ASSIGNED         2.88
DAYS AWAY FROM HOME STATION        321
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   AVG NO A/C ASSIGNEO              J 40
   AVG NO SP    A/C ASSIGNEO          04
   DAYS AWA     HOME STATION          51               RANGE                        VOLUME RANGE
   DAYS DEPL    ABOARD SHIP                      A       C       D       E       A       B       C       D       E

K18NO220 RO2                         O P E R A T I O N A L   S T A T I S T I C S                              PAGE


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                                                      AIRCRAFT
                                              ANNUAL EMPLOYMENT SUMMARY
                                 FISCAL YEAR 1985 ABSTRACT OF OPERATIONS  FISCAL YEAR

COAST GUARD TYPE TOTALS
                                     HU25A

                                                 ----LBRH----     ---SHIP OPERATIONS---                  ---READINESS---
                    MISSIONS     SORTIES       DAY       DUTY     OP-HOURS    RES-HOURS    EMP-HOURS    HIGH       OTHER

CVS                        1           2         1          1                                      2     231                CVS
RBS                        7           8         9         16                                     30                        RBS
SAR                     1389        1553      1562       2156                                   3779   42016                SAR
OOM ICE                   20          22        38         10                                     70                        OOM ICE
POLAR OPS                 15          33        42         34                                     77                        POLAR OPS
MSA                        9          18        19         30                                     49                        MSA
ELT-FISH-OOM             478         247       462        224                                   1772      65                ELT-FISH-OOM
ELT-FISH-FOR             384          96       199        150                                   1440      30                ELT-FISH-FOR
ELT-DRUGS               2094        2294      4173       2746                                   8027      95                ELT-DRUGS
ELT-OTHER                412         382       568        419                                   1391                        ELT-OTHER
MIL OPS                   44          55        51         47                                    102                        MIL OPS
OPTRA PILOTS            3254        3279      4434       2424                                   7643                        OPTRA PILOTS
OPTRA CREW               735         222       465        266                                   1540                        OPTRA CREW
OPTRA-SURFACE              4           2         3                                                 6                        OPTRA-SURFACE
CADET OC                  43           8        11         10                                     92                        CADET OC
A TO N                    36          43        49         32                                     95                        A TO N
RAD NAV                    1           3                    8                                      8                        RAD NAV
MER                       52          41        54         39                                    113                        MER
COOP FED                  45          52        63         51                                    142                        COOP FED
COOP STATE                 4           2         6          2                                     14                        COOP STATE
COOP LOCAL                 2           1         2          2                                      4                        COOP LOCAL
PIA                       80          97        46         87                                    158                        PIA
MISC                      98         124       143        108                                    273                        MISC
TEST                     285         286       240        115                                    359                        TEST
FERRY                     29          36        55         38                                     93                        FERRY
PES                      413          22        47         23                                   1654                        PES

TOTALS                  9934        8928     12742       9038                                  28933   42437       85199    TOTALS

                      UNABLE TO MEET
                  READINESS REQUIREMENTS                         NOT MISSION CAPABLE HOURS
                  OCCURRENCES      HOURS               NMCS       NMCM       NMCB       TOTAL
DAY                       270       1585              16111      17282      13691       47084    DAY
DUTY                      269       2516              42456      39100      28456      110012    DUTY
TOTAL                     539       4101              58567      56382      42147      157096    TOTAL

AVG NO A/C ASSIGNED                  33 75
AVG NO SPARE A/C ASSIGNED             1 24                                    CARGO SORTIES
DAYS AWAY FM HOME STATION              394             ------------LOAD RANGE-----------      -----------VOLUME RANGE---------
DAYS DEPLOYED ABOARD SHIP                                 A       B       C       D      E       A       B       C       D       E
                                                        358     149      93      21            543      57      19       2
TOTAL RESOURCE HOURS                 21780
AVG RES HOURS PER A/C                  645
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11/24/86

AIRCRAFT
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1986 ABSTRACT OF OPERATIONS FISCAL YEAR

COAST GUARD TYPE TOTALS

HU25A

	MISSIONS	SORTIES	----LBRH---- DAY	DUTY	---SHIP OPERATIONS--- OP-HOURS	RES-HOURS	EMP-HOURS	---READINESS--- HIGH	OTHER	
CVS										CVS
RBS	2	2	2	7			9			RBS
SAR	1488	1683	1806	2300			4213	46134		SAR
DOM ICE	13	22	25	15			42			DOM ICE
POLAR OPS										POLAR OPS
MSA	9	19	25	36			61			MSA
ELT-FISH-DOM	398	150	303	123			1487			ELT-FISH-DOM
ELT-FISH-FOR	331	29	64	46			1262			ELT-FISH-FOR
ELT-DRUGS	1753	1869	3212	2165			6333	4444		ELT-DRUGS
ELT-OTHER	365	412	617	496			1369	20		ELT-OTHER
MIL OPS	71	103	113	83			203			MIL OPS
OPTRA PILOTS	3498	3536	4949	2290			8326			OPTRA PILOTS
OPTRA CREW	1044	334	801	285			2267			OPTRA CREW
OPTRA-SURFACE	7	5	8	1			14			OPTRA-SURFACE
CADET OC	51	50	69	39			125			CADET OC
A TO N	32	27	27	22			61			A TO N
RAD NAV	1	1		2			2			RAD NAV
MER	46	39	61	29			123			MER
COOP FED	37	43	43	44			101			COOP FED
COOP STATE	4	6	12	1			14			COOP STATE
COOP LOCAL	4	2	4	2			6			COOP LOCAL
PIA	84	104	60	71			151			PIA
MISC	81	145	137	109			261			MISC
TEST	223	233	225	74			300			TEST
FERRY	38	50	58	57			123			FERRY
PES	335	8	31	16			1323			PES
TOTALS	9925	8872	12652	8313			28176	50598	91373	TOTALS

	UNABLE TO MEET READINESS REQUIREMENTS OCCURRENCES	HOURS
DAY	209	621
DUTY	207	1233
TOTAL	416	1854

NOT MISSION CAPABLE HOURS NMCS	NMCM	NMCB	TOTAL	
16551	14535	10166	41202	DAY
38908	35794	23632	98384	DUTY
55459	50329	33798	139586	TOTAL

AVG NO A/C ASSIGNED	33.13
AVG NO SPARE A/C ASSIGNED	1.40
DAYS AWAY FM HOME STATION	384
DAYS DEPLOYED ABOARD SHIP	
TOTAL RESOURCE HOURS	20965

CARGO SORTIES

-----LOAD RANGE----- A	B	C	D	E	-----VOLUME RANGE----- A	B	C	D	E
377	196	93	14		619	48	13		

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)3/10/88


                                        AIRCRAFT
                                 ANNUAL EMPLOYMENT SUMMARY
                    FISCAL YEAR 1987 ABSTRACT OF OPERATIONS  FISCAL YEAR

:OAST GUARD TYPE TOTALS
                                 HU25A

                                         ----LBRH----   ---SHIP OPERATIONS---               ---READINESS---
                 MISSIONS    SORTIES       DAY     DUTY   OP-HOURS   RES-HOURS   EMP-HOURS    HIGH     OTHER

CVS                                                                                                         CVS
RBS                     6          7         4        5                                 10                  RBS
SAR                  1401       1581      1697     2073                               3876   40718          SAR
DOM ICE                                                                                                     DOM ICE
POLAR OPS               4          4         5        7                                 13                  POLAR OPS
MSA                     3          5         8        5                                 14                  MSA
ELT-FISH-DOM          294         77       134      110                                919                  ELT-FISH-DOM
ELT-FISH-FOR          254         44       111       45                                810                  ELT-FISH-FOR
ELT-DRUGS            2521       2915      4865     3195                               8868     276          ELT-DRUGS
ELT-OTHER             419        458       791      409                               1457       5          ELT-OTHER
MIL OPS                30         36        49       23                                 89                  MIL OPS
OPTRA PILOTS         2737       2769      3802     1859                               6473                  OPTRA PILOTS
OPTRA CREW            620        202       467      160                               1255                  OPTRA CREW
OPTRA-SURFACE           4          2         4                                          10                  OPTRA-SURFACE
CADET OC               70         38        71       35                                167                  CADET OC
A TO N                 22         26        24       29                                 61                  A TO N
RAD NAV                 1          2                  6                                  6                  RAD NAV
MER                    39         48        77       26                                113                  MER
COOP FED               43         82        84       66                                159                  COOP FED
COOP STATE              2          3         5                                           5                  COOP STATE
COOP LOCAL              1          1         1                                           1                  COOP LOCAL
PIA                    88        141        74      105                                190                  PIA
MISC                   69        132       129       62                                194                  MISC
TEST                  205        229       229       96                                331                  TEST
FERRY                  49         68       103       65                                171                  FERRY
PES                   125          5        11        4                                429                  PES

TOTALS               9007       8875     12745     8385                              25621   40999    92530 TOTALS

                 UNABLE TO MEET
             READINESS REQUIREMENTS                       NOT MISSION CAPABLE HOURS
             OCCURRENCES      HOURS             NMCS       NMCM       NMCB      TOTAL
DAY                  166        648            15319      13245       7760      36324      DAY
DUTY                 249       1361            42592      31974      19223      93789      DUTY
TOTAL                415       2009            57911      45219      26983     130113      TOTAL

AVG NO A/C ASSIGNED            32.26
AVG NO SPARE A/C ASSIGNED        .23                                   CARGO SORTIES
DAYS AWAY FM HOME STATION        915          -----------LOAD RANGE----------   -----------VOLUME RANGE---------
DAYS DEPLOYED ABOARD SHIP                        A      B      C      D      E      A      B      C      D      E
                                               329    138     74     11           478     52     21      1
TOTAL RESOURCE HOURS           21130
AVG RES HOURS PER A/C            655
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12/01/88

                                                   AIRCRAFT
                                           ANNUAL EMPLOYMENT SUMMARY
                                FISCAL YEAR 1988 ABSTRACT OF OPERATIONS  FISCAL YEAR

COAST GUARD TYPE TOTALS
                                    HU25A

                                              ----LBRH----   ---SHIP OPERATIONS---                 ---READINESS---
                    MISSIONS     SORTIES       DAY     DUTY   OP-HOURS   RES-HOURS   EMP-HOURS   HIGH       OTHER

CVS                       1           1                   3                                  3                        CVS
RBS                       2           1                   3                                  3                        RBS
SAR                    1003        1130       1171     1442                               2684   40220                SAR
DOM ICE                                                                                                               DOM ICE
POLAR OPS                 1           2                   6                                  6                        POLAR OPS
MSA                       6          11         19        8                                 30                        MSA
ELT-FISH-DOM            141         104        141      131                                415                        ELT-FISH-DOM
ELT-FISH-FOR            122          52         93       73                                366                        ELT-FISH-FOR
ELT-DRUGS              1895        2098       3099     2467                               6169     397                ELT-DRUGS
ELT-OTHER               354         439        658      438                               1369                        ELT-OTHER
MIL OPS                  50          74         54       86                                151                        MIL OPS
OPTRA PILOTS           2812        2751       4080     2005                               6816                        OPTRA PILOTS
OPTRA CREW              604         271        561      138                               1254                        OPTRA CREW
OPTRA-SURFACE             2           1          2                                           3                        OPTRA-SURFACE
CADET DC                 66          48         68       27                                136                        CADET DC
A TO N                   38          26         24       21                                 56                        A TO N
RAD NAV                                                                                                               RAD NAV
MER                      61          60        106       68                                190                        MER
COOP FED                 42          49         77       26                              . 113                        COOP FED
COOP STATE                                                                                                            COOP STATE
COOP LOCAL                                                                                                            COOP LOCAL
PIA                      97         120         80       98                                193                        PIA
MISC                     47          90         79       68                                150                        MISC
TEST                    148         148        137       80                                223                        TEST
FERRY                    30          38         58       24                                 84                        FERRY
PES                     109           1          1        1                                294                        PES

TOTALS                 7631        7515      10508     7213                              20708   40617      61704     TOTALS

                   UNABLE TO MEET
               READINESS REQUIREMENTS                       NOT MISSION CAPABLE HOURS
                 OCCURRENCES      HOURS            NMCS       NMCM       NMCB      TOTAL
DAY                       40        221           18650     11086.       7545      37483        DAY
DUTY                      94        503           38879      22771      15345      76793        DUTY
TOTAL                    134        724           57529      33857      22890     114276        TOTAL

AVG NO A/C ASSIGNED                 26 68
AVG NO SPARE A/C ASSIGNED             .00                                      CARGO SORTIES
DAYS AWAY FM HOME STATION             754          -----------LOAD RANGE-----------      -----------VOLUME RANGE---------
DAYS DEPLOYED ABOARD SHIP                           A       B       C       D       E       A       B       C       D       E
                                                  483     122      28       8       7     547      75      16       3       7
TOTAL RESOURCE HOURS                17721
AVG RES HOURS PER A/C                 664
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AIRCRAFT
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1988 ABSTRACT OF OPERATIONS FISCAL YEAR

COAST GUARD TYPE TOTALS

HU25B

	MISSIONS	SORTIES	----LBRH---- DAY	DUTY	---SHIP OPERATIONS--- OP-HOURS	RES-HOURS	EMP-HOURS	---READINESS--- HIGH	OTHER	
CVS										CVS
RBS										RBS
SAR	65	73	58	98			159	4044		SAR
DOM ICE										DOM ICE
POLAR OPS										POLAR OPS
MSA	9	16	30	20			50			MSA
ELT-FISH-DOM	14	10	1	25			36			ELT-FISH-DOM
ELT-FISH-FOR	5	1	3				13			ELT-FISH-FOR
ELT-DRUGS	133	146	218	140			384			ELT-DRUGS
ELT-OTHER	20	30	39	30			85			ELT-OTHER
MIL OPS										MIL OPS
OPTRA PILOTS	133	125	195	73			314			OPTRA PILOTS
OPTRA CREW	62	52	106	10			158			OPTRA CREW
OPTRA-SURFACE	1						4			OPTRA-SURFACE
CADET OC										CADET OC
A TO N	1	1	2	1			3			A TO N
RAD NAV										RAD NAV
MER										MER
COOP FED	2	2	1				1			COOP FED
COOP STATE										COOP STATE
COOP LOCAL										COOP LOCAL
PIA	9	13	6	10			16			PIA
MISC	3	6	6	10			16			MISC
TEST	15	15	15	7			22			TEST
FERRY	3	5	9	8			17			FERRY
PES	19	1					48			PES
TOTALS	494	496	689	432			1326	4044	3654	TOTALS

	UNABLE TO MEET READINESS REQUIREMENTS OCCURRENCES	HOURS
DAY	1	5
DUTY	2	5
TOTAL	3	10

NOT MISSION CAPABLE HOURS NMCS	NMCM	NMCB	TOTAL	
2346	1448	288	4082	DAY
2563	1814	532	4909	DUTY
4909	3262	820	8991	TOTAL

AVG NO A/C ASSIGNED	2 02
AVG NO SPARE A/C ASSIGNED	.00
DAYS AWAY FM HOME STATION	48
DAYS DEPLOYED ABOARD SHIP	
TOTAL RESOURCE HOURS	1121
AVG RES HOURS PER A/C	555

CARGO SORTIES

---LOAD RANGE--- A	B	C	D	E	---VOLUME RANGE--- A	B	C	D	E
93	5	1			99				

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AIRCRAFT
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1988 ABSTRACT OF OPERATIONS FISCAL YEAR

COAST GUARD TYPE TOTALS

HU25C

	MISSIONS	SORTIES	----LBRH---- DAY	DUTY	---SHIP OPERATIONS--- OP-HOURS	RES-HOURS	EMP-HOURS	---READINESS--- HIGH	OTHER	
CVS										CVS
RBS										RBS
SAR	5	6	8	3			11	2208		SAR
DOM ICE										DOM ICE
POLAR OPS										POLAR OPS
MSA										MSA
ELT-FISH-DOM										ELT-FISH-DOM
ELT-FISH-FOR										ELT-FISH-FOR
ELT-DRUGS	211	266	269	388			659	138		ELT-DRUGS
ELT-OTHER	1	3		5			5			ELT-OTHER
MIL OPS	4	5	4	2			7			MIL OPS
OPTRA PILOTS	73	67	73	27			174			OPTRA PILOTS
OPTRA CREW	53	9	36	21			121			OPTRA CREW
OPTRA-SURFACE										OPTRA-SURFACE
CADET OC	2	1	1	1			4			CADET OC
A TO N										A TO N
RAD NAV										RAD NAV
MER	1		1				1			MER
COOP FED										COOP FED
COOP STATE										COOP STATE
COOP LOCAL										COOP LOCAL
PIA	1	1	1				1			PIA
MISC	12	19	11	17			28			MISC
TEST	6	6	3	3			6			TEST
FERRY	3	3	5	2			7			FERRY
PES										PES
TOTALS	372	386	412	469			1024	2346	4200	TOTALS

	UNABLE TO MEET READINESS REQUIREMENTS OCCURRENCES	HOURS	NOT MISSION CAPABLE HOURS NMCS	NMCM	NMCB	TOTAL	
DAY			55	1796	23	1874	DAY
DUTY			27	2243	12	2282	DUTY
TOTAL			82	4039	35	4156	TOTAL

AVG NO A/C ASSIGNED	1.31
AVG NO SPARE A/C ASSIGNED	.00
DAYS AWAY FM HOME STATION	99
DAYS DEPLOYED ABOARD SHIP	
TOTAL RESOURCE HOURS	881
AVG RES HOURS PER A/C	673

CARGO SORTIES

-----LOAD RANGE----- A	B	C	D	E	-----VOLUME RANGE----- A	B	C	D	E
5	2				7				

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AIRCRAFT
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1985 ABSTRACT OF OPERATIONS FISCAL YEAR

COAST GUARD TYPE TOTALS

HH65A

	MISSIONS	SORTIES	---LBRH--- DAY	DUTY	---SHIP OPERATIONS--- OP-HOURS	RES-HOURS	EMP-HOURS	---READINESS--- HIGH	OTHER	
CVS										CVS
RBS										RBS
SAR	52	64	45	58			104	569		SAR
DOM ICE										DOM ICE
POLAR OPS										POLAR OPS
MSA										MSA
ELT-FISH-DOM										ELT-FISH-DOM
ELT-FISH-FOR										ELT-FISH-FOR
ELT-DRUGS										ELT-DRUGS
ELT-OTHER										ELT-OTHER
MIL OPS	19	21	4	32			36			MIL OPS
OPTRA PILOTS	653	673	1016	321			1358			OPTRA PILOTS
OPTRA CREW	76	72	78	48			136			OPTRA CREW
OPTRA-SURFACE	23	45	43	39	343		83			OPTRA-SURFACE
CADET OC	4						7			CADET OC
A TO N	1	2	6				6			A TO N
RAD NAV										RAD NAV
MER	7	8	6	3			10			MER
COOP FED	2	4	4	1			5			COOP FED
COOP STATE										COOP STATE
COOP LOCAL	1		1				1			COOP LOCAL
PIA	2	2	2				2			PIA
MISC	1	1	2				2			MISC
TEST	183	215	104	38			143			TEST
FERRY	19	37	43	29			72			FERRY
PES										PES
TOTALS	1043	1144	1354	569	343		1965	569	7491	TOTALS

	UNABLE TO MEET READINESS REQUIREMENTS OCCURRENCES	HOURS
DAY	4	14
DUTY	4	10
TOTAL	8	24

NOT MISSION CAPABLE HOURS NMCS	NMCM	NMCB	TOTAL	
1186	3385	372	4943	DAY
3295	11574	471	15340	DUTY
4481	14959	843	20283	TOTAL

AVG NO A/C ASSIGNED 3.40
AVG NO SPARE A/C ASSIGNED .04
DAYS AWAY FM HOME STATION 51
DAYS DEPLOYED ABOARD SHIP

CARGO SORTIES

LOAD RANGE A	B	C	D	E	VOLUME RANGE A	B	C	D	E
1					1				

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                                        AIRCRAFT
                                ANNUAL EMPLOYMENT SUMMARY
                   FISCAL YEAR 1986 ABSTRACT OF OPERATIONS  FISCAL YEAR

COAST GUARD TYPE TOTALS
                                 HH65A

                                          ----LBRH----   ---SHIP OPERATIONS---               ---READINESS---
                   MISSIONS    SORTIES     DAY     DUTY    OP-HOURS   RES-HOURS   EMP-HOURS   HIGH      OTHER

CVS                                                                                                          CVS
RBS                    2          3          6                                        6                      RBS
SAR                 1164       1379        926     1435        87         20        2405     29883           SAR
DOM ICE                                                                                                      DOM ICE
POLAR OPS                                                                                                    POLAR OPS
MSA                                                                                                          MSA
ELT-FISH-DOM           3          3          4        3                                7                      ELT-FISH-DOM
ELT-FISH-FOR           2          2                   2                    1           3                      ELT-FISH-FOR
ELT-DRUGS            491        503        327      286      3448        375        1095       266           ELT-DRUGS
ELT-OTHER            291        322        134      105      3576        283         601                     ELT-OTHER
MIL OPS                8          9         14        3                               19                     MIL OPS
OPTRA PILOTS        3082       3106       4101     1616        23         24        6111                     OPTRA PILOTS
OPTRA CREW           751        643        788      384                   11        1349                     OPTRA CREW
OPTRA-SURFACE         99        120         96       40        48         35         205                     OPTRA-SURFACE
CADET OC              11          2          7        1                               23                     CADET OC
A TO N                28         43         53       11                    4          68                     A TO N
RAD NAV                4         10         15        2                               17                     RAD NAV
MER                   55         42         53       22                               84                     MER
COOP FED              75         83         72       45                              121                     COOP FED
COOP STATE            10         13          9        8                               18                     COOP STATE
COOP LOCAL             9         11          6        3                                9                     COOP LOCAL
PIA                  117        152        122       87                              219                     PIA
MISC                  41         53         52       15                               76                     MISC
TEST                1003       1164        563      211                    3         784                     TEST
FERRY                 33        100        111       80                              192                     FERRY
PES                    6          6          7        4                               11                     PES

TOTALS              7285       7769       7466     4363      7182        756       13423     30149     56370 TOTALS

                 UNABLE TO MEET
             READINESS REQUIREMENTS                         NOT MISSION CAPABLE HOURS
              OCCURRENCES      HOURS               NMCS       NMCM       NMCB       TOTAL
DAY                    88        340               7754      13549       5830       27133      DAY
DUTY                  118        700              24319      40614      11471       76404      DUTY
TOTAL                 206       1040              32073      54163      17301      103537      TOTAL

AVG NO A/C ASSIGNED                22.54
AVG NO SPARE A/C ASSIGNED            .57                               CARGO SORTIES
DAYS AWAY FM HOME STATION            184         -----------LOAD RANGE-----------     -----------VOLUME RANGE---------
DAYS DEPLOYED ABOARD SHIP            333          A      B      C      D      E         A      B      C      D      E
                                                 183    108     30      1               302     19      1
TOTAL RESOURCE HOURS               12585
AVG RES HOURS PER A/C                558
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03/10/88

                                                 AIRCRAFT
                                        ANNUAL EMPLOYMENT SUMMARY
                          FISCAL YEAR 1987 ABSTRACT OF OPERATIONS  FISCAL YEAR

COAST GUARD TYPE TOTALS
                                 HH65A

                                          ----LBRH----   ---SHIP OPERATIONS---             ---READINESS---
                 MISSIONS    SORTIES     DAY      DUTY   OP-HOURS   RES-HOURS   EMP-HOURS   HIGH      OTHER

CVS                     6         11      14         5                                 19                     CVS
RBS                    12         20       5        20                                 41                     RBS
SAR                  2273       2730    1500      2964        232         140        4684   71942             SAR
DOM ICE                 1                                                               2                     DOM ICE
POLAR OPS               5          8                 5          7           5          10                     POLAR OPS
MSA                     1          1       1                                            1                     MSA
ELT-FISH-DOM          220         85     121        66                                525                     ELT-FISH-DOM
ELT-FISH-FOR           93         17      26        21          2                     242                     ELT-FISH-FOR
ELT-DRUGS            1519       1490     743       717      14543        1209        3155    1928             ELT-DRUGS
ELT-OTHER             331        397      79        88       4740         502         784                     ELT-OTHER
MIL OPS                83        101      58        45        409          48         358     179             MIL OPS
OPTRA PILOTS         4921       4753    6269      2672        200          63        9886    1298             OPTRA PILOTS
OPTRA CREW           1108        877    1086       503          2          11        1970                     OPTRA CREW
OPTRA-SURFACE         303        201     151        90        300          48         475     101             OPTRA-SURFACE
CADET OC               27          9      11         4                                 47                     CADET OC
A TO N                135        156     142        24                                185                     A TO N
RAD NAV                 6          5       5         4                                  9                     RAD NAV
MER                   116        100      89        40                                149                     MER
COOP FED               99        102     124        42                                184                     COOP FED
COOP STATE             24         22      22         5                                 30                     COOP STATE
COOP LOCAL             39         35      31        15                                 52                     COOP LOCAL
PIA                   323        383     295       202         14           2         639                     PIA
MISC                  111        152     158        37                      1         210                     MISC
TEST                 1834       2089     827       465         31          18        1328                     TEST
FERRY                  58        146     200        81                                284                     FERRY
PES                    18         10      15         6                                 28                     PES

TOTALS              13666      14000   11972      8121      20480        2047       25297   75448     82471   TOTALS

                 UNABLE TO MEET
            READINESS REQUIREMENTS                            NOT MISSION CAPABLE HOURS
             OCCURRENCES      HOURS                  NMCS        NMCM        NMCB       TOTAL
DAY                  237       1130                 17192       23868       12476       53537     DAY
DUTY                 299       2147                 47763       59617       29935      137314     DUTY
TOTAL                536       3277                 64955       83485       42411      190851     TOTAL

AVG NO A/C ASSIGNED               41.38
AVG NO SPARE A/C ASSIGNED           .92                                    CARGO SORTIES
DAYS AWAY FM HOME STATION           268           -----------LOAD RANGE-----------    -----------VOLUME RANGE---------
DAYS DEPLOYED ABOARD SHIP           929            A       B       C       D       E       A      B      C      D      E
                                                 504     259      18       2              720     58      5
TOTAL RESOURCE HOURS              22140
AVG RES HOURS PER A/C               535
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                                                       AIRCRAFT
                                               ANNUAL EMPLOYMENT SUMMARY
                                   FISCAL YEAR 1988 ABSTRACT OF OPERATIONS  FISCAL YEAR

COAST GUARD TYPE TOTALS
                                       HH65A

                                                 ----LBRH----   ---SHIP OPERATIONS---                ---READINESS---
                  MISSIONS     SORTIES        DAY       DUTY    OP-HOURS   RES-HOURS    EMP-HOURS    HIGH        OTHER

CVS                      7          14         18          5                                   23                          CVS
RBS                     37          41         41         40                                   88                          RBS
SAR                   2970        3380       1784       3477        320         151          5538   112910                 SAR
DOM ICE                 18          10         20          2                                   26                          DOM ICE
POLAR OPS               29          40          8         15       1754          37            60     1431                 POLAR OPS
MSA                      2           2          1          2                                    3                          MSA
ELT-FISH-DOM           210         182         86         87       1902         139           385      100                 ELT-FISH-DOM
ELT-FISH-FOR            64          70         33         18       1144          37           129       25                 ELT-FISH-FOR
ELT-DRUGS             1685        1776       1116        737      10940        1295          3424     4544                 ELT-DRUGS
ELT-OTHER              370         443        116         89       4280         536           828       75                 ELT-OTHER
MIL OPS                157         187        118         66        442          80           277      296                 MIL OPS
OPTRA PILOTS          7277        6936       8591       4028         86         105         14359     1032                 OPTRA PILOTS
OPTRA CREW            1870        1362       1550        749         12          12          3162      902                 OPTRA CREW
OPTRA-SURFACE          468         297        267        135         76          59           744                          OPTRA-SURFACE
CADET OC                16           9         22          2                                   29                          CADET OC
A TO N                 281         314        346         59                                  454       25                 A TO N
RAD NAV                  2           4                                            4             4                          RAD NAV
MER                    315         212        220        100                                  380                          MER
COOP FED               241         271        283         94          1           2           444                          COOP FED
COOP STATE              47          48         42         27                                   82                          COOP STATE
COOP LOCAL              55          51         42         21                                   74       25                 COOP LOCAL
PIA                    481         581        357        305          4           7           750       75                 PIA
MISC                   115         154        138         64          3           3           215      100                 MISC
TEST                  2480        2881       1113        616          9          18          1808       75                 TEST
FERRY                  104         278        383        126          5           8           519       93                 FERRY
PES                     80          60         68         16                                  106                          PES

TOTALS               19381       19603      16763      10880      20978        2493         33911   121708      136304     TOTALS


                 UNABLE TO MEET
             READINESS REQUIREMENTS                           NOT MISSION CAPABLE HOURS
             OCCURRENCES     HOURS                  NMCS       NMCM       NMCB      TOTAL
DAY                  205      1492                 27042      31184      15650      73876       DAY
DUTY                 274      3076                 58540      65246      32525     156311       DUTY
TOTAL                479      4568                 85582      96430      48175     230187       TOTAL

AVG NO A/C ASSIGNED                 58.30
AVG NO SPARE A/C ASSIGNED             .70                                        CARGO SORTIES
DAYS AWAY FM HOME STATION             291          ----------LOAD RANGE-----------      -----------VOLUME RANGE---------
DAYS DEPLOYED ABOARD SHIP            1183           A      B      C      D      E        A      B      C      D      E
                                                   654    309     45      5             744     57     12
TOTAL RESOURCE HOURS                30136
AVG RES HOURS PER A/C                 517
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CUTTERS
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1983 ABSTRACT OF OPERATIONS FISCAL YEAR 1983

COAST GUARD TYPE AVERAGE

	WMEC 270 FT					WPB 82 FT				
		RESOURCES		READINESS			RESOURCES		READINESS	
	MSSN	EMPHRS	RESHRS	HIGH	OTHER	MSSN	EMPHRS	RESHRS	HIGH	OTHER
CVS							1	1	16	22
RBS						3	26	9	29	5
SAR	1	2	2			33	271	252	2758	1427
DOM ICE										
POLAR OPS										
MSA							1			
ELT FISH D						4	76	67	37	2
ELT FISH F							5	4		
ELT DRUGS	5	593	591			35	785	712	250	161
ELT OTHER						8	131	100	5	
MIL OPS							5	5		
MIL PREP	1	26	26				3	3		
OP TRA	3	73	73			14	72	46	6	16
CADET OC						1	13	2		
RESERVE							1			
BRIDGE							1	1		
A TO N						2	12	9		
RAD NAV										
MER							1	1		
COOP FED						2	19	17	2	
COOP STATE							3	2		
COOP LOCAL							1	1		
PIA						2	22	19		1
MISC						9	53	51	6	
PES PATROL										
PES SECUR							4	4		
PES OTHER						1	26	1		
TOTALS	10	694	692			116	1534	1307	3108	1634

	WMEC 270 FT	WPB 82 FT
SCHEDULED MAINTENANCE	4852	2413
UNSCHEDULED MAINTENANCE	192	298
TOTAL MAINTENANCE	5044	2711
TOTAL HOURS ACCOUNTED FOR	5736	8760
HOMEPORT		
U/W DAYS	0	57
HIGH READINESS DAYS	0	88
AVAILABLE DAYS	0	53
MAINTENANCE DAYS	11	79
AFHP		
U/W DAYS	40	55
INPORT OPERATIONAL DAYS	0	8
MAINTENANCE DAYS	188	26
TOTAL AFHP DAYS	228	88
TOTAL DAYS ACCOUNTED FOR	239	365
CUTTER EMPLOYMENT DAYS	228	190
TOTAL CUTTERS REPORTED	1	53

OPERATIONAL STATISTICS

CUTTERS
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1984 ABSTRACT OF OPERATIONS FISCAL YEAR 1984

COAST GUARD TYPE TOTALS

	WMEC 270 FT					WPB 82 FT				
		RESOURCES		READINESS			RESOURCES		READINESS	
	MSSN	EMPHRS	RESHRS	HIGH	OTHER	MSSN	EMPHRS	RESHRS	HIGH	OTHER
CVS						1	5	5	1504	177
RBS						108	1194	409		
SAR	3	15	2	86		1480	13326	12252	130389	75958
DOM ICE										
POLAR OPS						9	588	522 add to ELT OTHER		
MSA	1	20	20			6	72	72		
ELT FISH D						190	3601	3159	425	200
ELT FISH F							9			
ELT DRUGS	15	1563	1515		197	2106	46391	40741	12989	10650
ELT OTHER						419	7849	5640	183	44
MIL OPS						23	721	578	40	342
MIL PREP	8	472	438		583	72	1073	860	184	
OP TRA	7	607	545		918	734	4852	2520	3	773
CADET DC						38	455	137		
RESERVE						24	206	51		
BRIDGE										
A TO N						84	743	570		
RAD NAV										
MER						6	103	100		
COOP FED						49	653	541		
COOP STATE						6	39	27		
COOP LOCAL						4	16	16		
PIA	7	219	19	33	301	114	860	644	28	25
MISC	16	339	315	70	185	384	2568	2491		703
PES PATROL						4	46	7		
PES SECUR						21	216	161		
PES OTHER						11	60	60		
TOTALS	57	3235	2854	189	2184	5893	85646	71563	145745	88872

	WMEC 270 FT	WPB 82 FT
SCHEDULED MAINTENANCE	14214	139028
UNSCHEDULED MAINTENANCE	376	20344
TOTAL MAINTENANCE	14590	159372
TOTAL HOURS ACCOUNTED FOR	19817	465552
HOMEPORT		
U/W DAYS	27	2812
HIGH READINESS DAYS	7	3955
AVAILABLE DAYS	0	2801
MAINTENANCE DAYS	214	4469
AFHP		
U/W DAYS	162	3237
INPORT OPERATIONAL DAYS	51	489
MAINTENANCE DAYS	365	1635
TOTAL AFHP DAYS	578	5361
TOTAL DAYS ACCOUNTED FOR	826	19398
CUTTER EMPLOYMENT DAYS	609	10151
TOTAL CUTTERS REPORTED		

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K1BN0240.R04                          O P E R A T I O N A L   S T     I S T I C S
12/10/85
                                                              CUTTERS
                                                       ANNUAL  EMPLOYMENT SUMMARY
                                    FISCAL YEAR 1985  ABSTRACT OF OPERATIONS  FISCAL YEAR 1985

COAST GUARD TYPE TOTALS
                           WMEC  270 FT                                                  WPB    82 FT

                                               INPORT     HIGH                                                INPORT    HIGH
                      MSSN   EMPHRS   RESHRS      OPS     READ            MSSN   EMPHRS   RESHRS      OPS     READ
CVS                                                                                                          1494     CVS
RBS                                                                          81     1175      475       16           RBS
SAR                     18      208      127                               1479    13999    11888     5824   117312   SAR
DOM ICE                                                                       2        6        6               382   DOM ICE
POLAR OPS                                                                                                             POLAR OPS
MSA                                                                                                                   MSA
ELT-FISH-DOM                                                                 91     2422     2246       26            ELT-FISH-DOM
ELT-FISH-FOR                                                                                                          ELT-FISH-FOR
ELT-DRUGS               20     3610     2846       57                      2368    52391    46873     1337    13240   ELT-DRUGS
ELT-OTHER                4      726      683       52                       309     7198     6372       31      389   ELT-OTHER
MIL OPS                  5      932      805                 8               58      803      697       15       46   MIL OPS
OP TRA                  19     1032      789      148                       758     4919     2768     2368       88   OP TRA
CADET OC                                                                     13      262       17                     CADET OC
RESERVE                                                                      22      273       93       51            RESERVE
BRIDGE                                                                                                                BRIDGE
A TO N                                                                       72      604      525       18            A TO N
RAD NAV                                                                       1        2        2                     RAD NAV
MER                                                                          11      137       94       36            MER
COOP FED                                                                     98     4317     4135       30       31   COOP FED
COOP STATE                                                                    7      105       10        2            COOP STATE
COOP LOCAL                                                                   19       99       60                     COOP LOCAL
PIA                      8      105       54      228                       117     1118      917      109            PIA
MISC                    22      471      458      185       51              267     1955     1850      392      104   MISC
PES                                                                          28      411      340       63            PES

TOTALS                  96     7084     5762      670       59             5801    92196    79368    10318   133086   TOTALS

MAINTENANCE HOURS                      23808                                                        171413     MAINTENANCE HOURS
STANDBY HOURS                           4741                                                         70095     STANDBY HOURS
TOTAL HOURS ACCOUNTED FOR              35040                                                        464280     TOTAL HOURS ACCOUNTED FOR


                                  HOMEPORT     AFHP     TOTAL                  HOMEPORT    AFHP     TOTAL
U/W DAYS                                50      282       332                      2393    3571      5964      U/W DAYS
INPORT OPS DAYS                         17       11        28                       545      68       613      INPORT OPS DAYS
HIGH READINESS DAYS                      5                  5                      3659     264      3923      HIGH READINESS DAYS
MAINTENANCE DAYS                       412      547       959                      4786    1813      6599      MAINTENANCE DAYS
STANDBY DAYS                           120       16       136                      2158      88      2246      STANDBY DAYS
TOTAL DAYS                             604      856      1460                     13541    5804     19345      TOTAL DAYS

DAYS AVAIL FOR OPS                                        501                                       12746      DAYS AVAIL FOR OPS

TTL CUTTERS REPORTED                                        4                                          53      TTL CUTTERS REPORTED
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O P E R A T I O N A L   S T A T I S T I C S

CUTTERS
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1986 ABSTRACT OF OPERATIONS FISCAL YEAR 1986

COAST GUARD TYPE TOTALS

	WMEC 270 FT					WPB 82 FT					
	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	
CVS						2	12	11			CVS
RBS						24	304	262	8	862	RBS
SAR	33	988	941	8	6	1268	12984	10067	4056	139741	SAR
DOM ICE						1	1	1			DOM ICE
POLAR OPS											POLAR OPS
MSA	1	28	9			10	107	93	41		MSA
ELT-FISH-DOM	24	516	516		70	98	1642	1090	47		ELT-FISH-DOM
ELT-FISH-FOR						2	9	9			ELT-FISH-FOR
ELT-DRUGS	38	5926	5493	146	24	1593	31988	27071	913	7709	ELT-DRUGS
ELT-OTHER	7	1992	1820	32	41	273	5912	5408	95	1480	ELT-OTHER
MIL OPS	27	718	713	153		34	469	371	85	30	MIL OPS
OP TRA	74	2211	1749	1196	287	839	6013	3588	2989		OP TRA
CADET OC	1	624				13	128	48			CADET OC
RESERVE						30	210	88	49	40	RESERVE
BRIDGE											BRIDGE
A TO N						76	535	504	15	4	A TO N
RAD NAV											RAD NAV
MER						28	313	313	8	64	MER
COOP FED						83	4359	4038	19	75	COOP FED
COOP STATE						7	24	21			COOP STATE
COOP LOCAL						14	146	146	9		COOP LOCAL
PIA	6	12	9	34		104	806	504	414		PIA
MISC	9	171	171	35	17	362	2562	2531	326	64	MISC
PES						30	672	525		26	PES
TOTALS	220	13186	11421	1604	445	4891	69196	56689	9074	150095	TOTALS

	WMEC 270 FT	WPB 82 FT	
MAINTENANCE HOURS	21066	178404	MAINTENANCE HOURS
STANDBY HOURS	504	73846	STANDBY HOURS
TOTAL HOURS ACCOUNTED FOR	35040	468108	TOTAL HOURS ACCOUNTED FOR

	HOMEPORT	AFHP	TOTAL	HOMEPORT	AFHP	TOTAL	
U/W DAYS	47	541	588	2071	2742	4813	U/W DAYS
INPORT OPS DAYS	38	25	63	420	81	501	INPORT OPS DAYS
HIGH READINESS DAYS	2	6	8	4456	340	4796	HIGH READINESS DAYS
MAINTENANCE DAYS	745	42	787	5272	1683	6955	MAINTENANCE DAYS
STANDBY DAYS	6	8	14	2377	63	2440	STANDBY DAYS
TOTAL DAYS	838	622	1460	14596	4909	19505	TOTAL DAYS
DAYS AVAIL FOR OPS			673			12550	DAYS AVAIL FOR OPS
TTL CUTTERS REPORTED			4			54	TTL CUTTERS REPORTED

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CUTTERS
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1987 ABSTRACT OF OPERATIONS FISCAL YEAR 1987

COAST GUARD TYPE TOTALS

	WMEC 270 FT					WPB 82 FT					
	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	
CVS						1	17	2		913	CVS
RBS						15	218	28		761	RBS
SAR	62	952	880			1286	15795	11340	2478	115707	SAR
DOM ICE											DOM ICE
POLAR OPS											POLAR OPS
MSA	4	575	105			3	20	20			MSA
ELT-FISH-DOM	5	2127	2120	153	48	279	5456	4057	425	2303	ELT-FISH-DOM
ELT-FISH-FOR						13	222	108		50	ELT-FISH-FOR
ELT-DRUGS	108	8637	7872	754	279	2310	49438	44473	1146	8053	ELT-DRUGS
ELT-OTHER	31	3254	2570	124	119	153	2835	2309	34	1238	ELT-OTHER
MIL OPS	53	1041	927	436		75	1701	1550	154	20	MIL OPS
OP TRA	67	3135	2838	1901	131	923	7337	3086	1960		OP TRA
CADET OC	3	839	53	80		1	105	105			CADET OC
RESERVE	2			16		12	137	54	74		RESERVE
BRIDGE											BRIDGE
A TO N						42	401	365	7		A TO N
RAD NAV											RAD NAV
MER						14	67	44	24	42	MER
COOP FED	4	56	56			32	772	671	2	15	COOP FED
COOP STATE						8	53	37	1		COOP STATE
COOP LOCAL						15	58	43	3		COOP LOCAL
PIA	17	33	31	519		124	786	465	268		PIA
MISC	14	59	59	120		301	1719	1697	273	76	MISC
PES						17	116	108	29	122	PES
TOTALS	370	20708	17511	4103	577	5624	87253	70562	6878	129300	TOTALS

	WMEC 270 FT	WPB 82 FT	
MAINTENANCE HOURS	29838	187262	MAINTENANCE HOURS
STANDBY HOURS	2656	72486	STANDBY HOURS
TOTAL HOURS ACCOUNTED FOR	54685	466488	TOTAL HOURS ACCOUNTED FOR

	WMEC 270 FT			WPB 82 FT			
	HOMEPORT	AFHP	TOTAL	HOMEPORT	AFHP	TOTAL	
U/W DAYS	39	829	868	1933	3406	5339	U/W DAYS
INPORT OPS DAYS	57	110	167	399	69	468	INPORT OPS DAYS
HIGH READINESS DAYS	4	15	19	3610	347	3957	HIGH READINESS DAYS
MAINTENANCE DAYS	1038	139	1177	5012	2242	7254	MAINTENANCE DAYS
STANDBY DAYS	25	23	48	2345	74	2419	STANDBY DAYS
TOTAL DAYS	1163	1116	2279	13299	6138	19437	TOTAL DAYS
DAYS AVAIL FOR OPS			1102			12183	DAYS AVAIL FOR OPS
TTL CUTTERS REPORTED			8			54	TTL CUTTERS REPORTED

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CUTTERS
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1988 ABSTRACT OF OPERATIONS FISCAL YEAR 1988

COAST GUARD TYPE TOTALS

	WMEC 230 FT					WMEC 270 FT					
	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	
CVS	4	272	56	276							CVS
RBS											RBS
SAR	14	146	146	2		82	1082	935	1	20	SAR
DOM ICE	1	12	12								DOM ICE
POLAR OPS											POLAR OPS
MSA	7	1827				14	1269	39			MSA
ELT-FISH-DOM	10	2252	1294	36		12	2226	1690	6	72	ELT-FISH-DOM
ELT-FISH-FOR	9	2110	371								ELT-FISH-FOR
ELT-DRUGS	9	2172	46			114	12184	10672	803	48	ELT-DRUGS
ELT-OTHER	7	1827	12			10	3642	3196	235	15	ELT-OTHER
MIL OPS						42	1625	1252	660	64	MIL OPS
OP TRA	6	51	11			70	3641	3347	1968	75	OP TRA
CADET DC						5	1359	48	18		CADET DC
RESERVE											RESERVE
BRIDGE											BRIDGE
A TO N	4	12	4	12		1	2				A TO N
RAD NAV											RAD NAV
MER	2	10	10	4							MER
COOP FED	1	36		36		5	469	40	44		COOP FED
COOP STATE											COOP STATE
COOP LOCAL											COOP LOCAL
PIA						21	392	99	416		PIA
MISC						30	485	481	454		MISC
PES											PES
TOTALS	74	10727	1962	366		406	28376	21799	4605	294	TOTALS

	WMEC 230 FT	WMEC 270 FT	
MAINTENANCE HOURS	6312	44723	MAINTENANCE HOURS
STANDBY HOURS	144	6928	STANDBY HOURS
TOTAL HOURS ACCOUNTED FOR	8784	78349	TOTAL HOURS ACCOUNTED FOR

	HOMEPORT	AFHP	TOTAL	HOMEPORT	AFHP	TOTAL	
U/W DAYS	2	80	82	71	1048	1119	U/W DAYS
INPORT OPS DAYS	3	12	15	86	88	174	INPORT OPS DAYS
HIGH READINESS DAYS				2	3	5	HIGH READINESS DAYS
MAINTENANCE DAYS	186	77	263	1436	315	1751	MAINTENANCE DAYS
STANDBY DAYS		6	6	115	101	216	STANDBY DAYS
TOTAL DAYS	191	175	366	1710	1555	3265	TOTAL DAYS
DAYS AVAIL FOR OPS			103			1514	DAYS AVAIL FOR OPS
TTL CUTTERS REPORTED			1			10	TTL CUTTERS REPORTED

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                                                                 CUTTERS
                                                        ANNUAL   EMPLOYMENT SUMMARY
                                              FISCAL YEAR 1986  ABSTRACT OF OPERATIONS  FISCAL YEAR 1986

COAST GUARD TYPE TOTALS
                                  WPB    95 FT                                             WPB    110 FT

                                                  INPORT     HIGH                                              INPORT     HIGH
                      MSSN   EMPHRS    RESHRS        OPS     READ              MSSN    EMPHRS    RESHRS        OPS     READ
CVS                     44      586       149                                                                                  CVS
RBS                     58     1615      1114          4      683                                                              RBS
SAR                    505     5342      4772        325    51649                63       393       328                 109    SAR
DOM ICE                                                       336                                                              DOM ICE
POLAR OPS                                                                                                                      POLAR OPS
MSA                      1        8         8                                                                                  MSA
ELT-FISH-DOM           145     4254      3059         75     1961                                                              ELT-FISH-DOM
ELT-FISH-FOR            50      929       231                                                                                  ELT-FISH-FOR
ELT-DRUGS              470    12046     10277        100     1007               112      6872      6623         61     1070    ELT-DRUGS
ELT-OTHER              177     5838      5765        159      502                 6       352       201                        ELT-OTHER
MIL OPS                 32      889       836        144                                                                       MIL OPS
OP TRA                 315     2590      1602       2204       36                41       652       571        693             OP TRA
CADET OC                10      102        41                                     2       250                                  CADET OC
RESERVE                  1                             6                                                                       RESERVE
BRIDGE                                                                                                                         BRIDGE
A TO N                  41      323       284         15                          1         2         2                        A TO N
RAD NAV                  1        9         6                                                                                  RAD NAV
MER                     10       21        13         41                                                                       MER
COOP FED                36      562       412         68      192                 6        14        14                        COOP FED
COOP STATE               2       16         3                                                                                  COOP STATE
COOP LOCAL               8       97        93          7                                                                       COOP LOCAL
PIA                     34      116        90         73                         17        52        40         32             PIA
MISC                   112      759       697        134       30                16       222       193         53        2    MISC
PES                     27      299       293        257       58                                                              PES

TOTALS                2079    36401     29745       3612    56454               264      8809      7972        839     1181    TOTALS


MAINTENANCE HOURS                         74924                                                              19986    MAINTENANCE HOURS
STANDBY HOURS                             27985                                                               2085    STANDBY HOURS
TOTAL HOURS ACCOUNTED FOR                192720                                                              32063    TOTAL HOURS ACCOUNTED FOR


                                   HOMEPORT      AFHP     TOTAL                    HOMEPORT      AFHP     TOTAL
U/W DAYS                                841      1260      2101                          63       416       479      U/W DAYS
 INPORT OPS DAYS                        167        72       239                          17        25        42      INPORT OPS DAYS
 HIGH READINESS DAYS                   1692       103      1795                          32         4        36      HIGH READINESS DAYS
 MAINTENANCE DAYS                      2382       548      2930                         560       159       719      MAINTENANCE DAYS
 STANDBY DAYS                           928        37       965                          59         3        62      STANDBY DAYS
 TOTAL DAYS                            6010      2020      8030                         731       607      1338      TOTAL DAYS

DAYS AVAIL FOR OPS                                         5100                                             619      DAYS AVAIL FOR OPS

TTL CUTTERS REPORTED                                         22                                               9      TTL CUTTERS REPORTED
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OPERATIONAL STATISTICS

CUTTERS
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1987 ABSTRACT OF OPERATIONS FISCAL YEAR 1987

COAST GUARD TYPE TOTALS

	WPB 95 FT					WPB 110 FT					
	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	
CVS	33	1062	214	20	340						CVS
RBS	57	1628	523	38	633	3	134	134	12		RBS
SAR	360	5093	3792	255	46398	224	3013	1379	97	6162	SAR
DOM ICE											DOM ICE
POLAR OPS											POLAR OPS
MSA	2	8	5			2	2	2			MSA
ELT-FISH-DOM	112	4318	2541	67	225	49	2120	1564		682	ELT-FISH-DOM
ELT-FISH-FOR	43	964	475	2	85	2	66	33		25	ELT-FISH-FOR
ELT-DRUGS	457	18150	15919	199	1040	353	25856	23938	415	5226	ELT-DRUGS
ELT-OTHER	99	4929	3500	42	353	13	1063	257	14	194	ELT-OTHER
MIL OPS	33	416	355	139		24	924	740	309	35	MIL OPS
OP TRA	283	2436	1473	720		254	5155	1097	1596	239	OP TRA
CADET DC	2	8	8			40	1796	153	114		CADET DC
RESERVE	42	83	25	40		1	53	10			RESERVE
BRIDGE											BRIDGE
A TO N	57	391	369	32		15	40	38	12		A TO N
RAD NAV						2	28	4	1	19	RAD NAV
MER	18	73	63	29		2			3		MER
COOP FED	45	849	662	4	11	15	725	399	6	48	COOP FED
COOP STATE	15	164	137	78	86	2	14	12			COOP STATE
COOP LOCAL	12	181	168	28		3	18	9	3		COOP LOCAL
PIA	55	295	277	349		95	704	229	465	16	PIA
MISC	74	1237	1033	257	5	44	1116	965	347	63	MISC
PES	10	183	177	10		7	85	63	133		PES
TOTALS	1809	42468	31716	2309	49176	1150	42912	31026	3527	12709	TOTALS

	WPB 95 FT	WPB 110 FT	
MAINTENANCE HOURS	60410	58442	MAINTENANCE HOURS
STANDBY HOURS	24968	13707	STANDBY HOURS
TOTAL HOURS ACCOUNTED FOR	168579	119411	TOTAL HOURS ACCOUNTED FOR

	HOMEPORT	AFHP	TOTAL	HOMEPORT	AFHP	TOTAL	
U/W DAYS	729	1342	2071	298	1535	1833	U/W DAYS
INPORT OPS DAYS	108	21	129	108	72	180	INPORT OPS DAYS
HIGH READINESS DAYS	1533	62	1595	296	52	348	HIGH READINESS DAYS
MAINTENANCE DAYS	1927	467	2394	2128	110	2238	MAINTENANCE DAYS
STANDBY DAYS	803	35	838	315	64	379	STANDBY DAYS
TOTAL DAYS	5100	1927	7027	3145	1833	4978	TOTAL DAYS
DAYS AVAIL FOR OPS			4633			2740	DAYS AVAIL FOR OPS
TTL CUTTERS REPORTED			22			16	TTL CUTTERS REPORTED

OPERATIONAL STATISTICS

CUTTERS
ANNUAL EMPLOYMENT SUMMARY
FISCAL YEAR 1988 ABSTRACT OF OPERATIONS FISCAL YEAR 1988

COAST GUARD TYPE TOTALS

	WPB 95 FT					WPB 110 FT					
	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	MSSN	EMPHRS	RESHRS	INPORT OPS	HIGH READ	
CVS	19	566	117			127	94	90	4		CVS
RBS	35	840	348	3		71	428	93	6	670	RBS
SAR	303	3734	3605	81	39781	240	3557	1727	95	12887	SAR
DOM ICE											DOM ICE
POLAR OPS											POLAR OPS
MSA	1	8	8								MSA
ELT-FISH-DOM	98	3378	2925	30	1994	51	2035	1677	58	958	ELT-FISH-DOM
ELT-FISH-FOR	8	162	73			1	1	1			ELT-FISH-FOR
ELT-DRUGS	340	13504	12301	259	3029	317	26021	23609	777	7639	ELT-DRUGS
ELT-OTHER	73	2449	1736	87	376	42	3076	1279	48	663	ELT-OTHER
MIL OPS	34	734	684	84	40	45	1529	1384	415	217	MIL OPS
OP TRA	316	1492	983	1247		692	4864	2053	1025	41	OP TRA
CADET OC	1	20	16			75	1745	239	1		CADET OC
RESERVE	30	50	40	134		9	93	51	5		RESERVE
BRIDGE											BRIDGE
A TO N	36	200	175	54		30	137	135	61		A TO N
RAD NAV	1	6	6			3	4	4	4		RAD NAV
MER	2			4		11	7	7	27		MER
COOP FED	34	604	575	46	98	27	441	291	73	16	COOP FED
COOP STATE	7	46	46			4	19	19			COOP STATE
COOP LOCAL	6	21	21	51		6	13	10	14		COOP LOCAL
PIA	38	204	189	197		57	244	155	358	19	PIA
MISC	72	929	905	122		110	1021	803	551	220	MISC
PES	14	281	277	9	119	9	188	170	2		PES
TOTALS	1468	29228	25030	2408	45437	1927	45517	33797	3524	23330	TOTALS

	WPB 95 FT	WPB 110 FT	
MAINTENANCE HOURS	49647	80626	MAINTENANCE HOURS
STANDBY HOURS	23446	19708	STANDBY HOURS
TOTAL HOURS ACCOUNTED FOR	145968	160985	TOTAL HOURS ACCOUNTED FOR

	HOMEPORT	AFHP	TOTAL	HOMEPORT	AFHP	TOTAL	
U/W DAYS	636	1105	1741	433	1671	2104	U/W DAYS
INPORT OPS DAYS	89	26	115	114	71	185	INPORT OPS DAYS
HIGH READINESS DAYS	1418	74	1492	649	85	734	HIGH READINESS DAYS
MAINTENANCE DAYS	1585	374	1959	2661	421	3082	MAINTENANCE DAYS
STANDBY DAYS	754	21	775	572	34	606	STANDBY DAYS
TOTAL DAYS	4482	1600	6082	4429	2282	6711	TOTAL DAYS
DAYS AVAIL FOR OPS			4123			3629	DAYS AVAIL FOR OPS
TTL CUTTERS REPORTED			17			23	TTL CUTTERS REPORTED

APPENDIX C. MINITAB REGRESSION OUTPUT

A. ANALYSIS OF TOTAL OE COSTS FOR THE HU-25A.

```
      TotlOEAd AFlt-Hrs ASorties
AFlt-Hrs -0.116
ASorties  0.103    0.949
AAvg-A/C  0.189    0.951    0.953
```

B. ANALYSIS OF OG-30 COSTS FOR THE HU-25A.

```
      OG30TAdj AFlt-Hrs ASorties
AFlt-Hrs  0.978
ASorties  0.960    0.949
AAvg-A/C  0.995    0.951    0.953


The regression equation is
OG30TAdj = -27350672 + 1687 AFlt-Hrs

Predictor        Coef          Stdev     t-ratio
Constant    -27350672        5339559       -5.12
AFlt-Hrs       1686.8          255.3        6.61

s = 380157      R-sq = 95.6%     R-sq(adj) = 93.4%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 6.307466E+12 6.307466E+12
Error         2 289038204928 144519069696
Total         3 6.596504E+12
```

```
The regression equation is
OG3OTAdj = -42294832 + 5725 ASorties

Predictor        Coef          Stdev     t-ratio
Constant    -42294832       10347028       -4.09
ASorties         5725           1180        4.85

s = 508116       R-sq = 92.2%      R-sq(adj) = 88.3%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 6.080140E+12 6.080140E+12
Error          2 516364500992 258182217728
Total          3 6.596504E+12

Unusual Observations
Obs.ASorties  OG3OTAdj    Fit Stdev.Fit  Residual   St.Resid
  4     8397   5833935  78248    506074     55687       1.22 X

X denotes an obs. whose X value gives it large influence.


The regression equation is
OG3OTAdj = -21196960 + 901253 AAvg-A/C

Predictor        Coef          Stdev     t-ratio
Constant    -21196960        2115245      -10.02
AAvg-A/C       901253          65450       13.77

s = 185541       R-sq = 99.0%      R-sq(adj) = 98.4%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 6.527653E+12 6.527653E+12
Error          2  68851007488  34425503744
Total          3 6.596504E+12
```

```
The regression equation is
OG3OTAdj = -33152464 + 1161 AFlt-Hrs + 1916 ASorties

Predictor        Coef          Stdev     t-ratio
Constant    -33152464       12449226       -2.66
AFlt-Hrs         1161           1007        1.15
ASorties         1916           3483        0.55

s = 471042       R-sq = 96.6%     R-sq(adj) = 89.9%

Analysis of Variance
SOURCE        DF           SS           MS
Regression     2 6.374624E+12 3.187311E+12
Error          1 221880123392 221880123392
Total          3 6.596504E+12

SOURCE        DF       SEQ SS
AFlt-Hrs       1 6.307466E+12
ASorties       1  67158069248

Unusual Observations
Obs.AFlt-Hrs  OG3OTAdj      Fit  Stdev.Fit  Residual  St.Resid
 4     19723   5833935 5825988     470974      7947    1.00 X

X denotes an obs. whose X value gives it large influence.


The regression equation is
OG3OTAdj = -21167936 - 6722 AFlt-Hrs + 900415 AAvg-A/C

Predictor        Coef          Stdev     t-ratio
Constant    -21167936        3039210       -6.96
AFlt-Hrs        -6722         129460       -0.05
AAvg-A/C       900415          93834        9.60

s = 262042       R-sq = 99.0%     R-sq(adj) = 96.9%

Analysis of Variance
SOURCE        DF           SS           MS
Regression     2 6.527839E+12 3.263919E+12
Error          1  68665921536  68665921536
Total          3 6.596504E+12

SOURCE        DF       SEQ SS
AFlt-Hrs       1 205157761024
AAvg-A/C       1 6.322680E+12

Unusual Observations
Obs.AFlt-Hrs  OG3OTAdj       Fit  Stdev.Fit   Residual St.Resid
 4      1.22   5833935   5845273     261796     -11338  -1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG3OTAdj = -21167936 + 900415 AAvg-A/C - 6722 AFlt-Hrs

Predictor         Coef          Stdev     t-ratio
Constant     -21167936        3039210       -6.96
AAvg-A/C        900415          93834        9.60
AFlt-Hrs         -6722         129460       -0.05

s = 262042      R-sq = 99.0%     R-sq(adj) = 96.9%

Analysis of Variance
SOURCE        DF          SS          MS
Regression     2 6.527839E+12 3.263919E+12
Error          1  68665921536  68665921536
Total          3 6.596504E+12

SOURCE        DF       SEQ SS
AAvg-A/C       1 6.527653E+12
AFlt-Hrs       1    185108192

Unusual Observations
Obs.AAvg-A/C  OG3OTAdj      Fit  Stdev.Fit  Residual  St.Resid
 4      30.0   5833935  5845273     261796    -11338   -1.00 X

X denotes an obs. whose X value gives it large influence.


The regression equation is
OG3OTAdj = -24396432 + 782 ASorties + 788067 AAvg-A/C

Predictor         Coef          Stdev     t-ratio
Constant     -24396432        8070304       -3.02
ASorties           782           1853        0.42
AAvg-A/C        788067         281558        2.80

s = 241766      R-sq = 99.1%     R-sq(adj) = 97.3%

Analysis of Variance
SOURCE        DF          SS          MS
Regression     2 6.538054E+12 3.269027E+12
Error          1  58451021824  58451021824
Total          3 6.596505E+12

SOURCE        DF       SEQ SS
ASorties       1 6.080140E+12
AAvg-A/C       1 457913466880

Unusual Observations
Obs.ASorties  OG3OTAdj       Fit Stdev.Fit  Residual  St.Resid
 4      8397   5833935   5817402    241200     16533    1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG30TAdj = -24396432 + 788067 AAvg-A/C + 782 ASorties

Predictor        Coef        Stdev     t-ratio
Constant    -24396432      8070305       -3.02
AAvg-A/C       788067       281558        2.80
ASorties          782         1853        0.42

s = 241766      R-sq = 99.1%     R-sq(adj) = 97.3%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 6.538054E+12 3.269027E+12
Error         1  58451021824  58451021824
Total         3 6.596505E+12

SOURCE       DF       SEQ SS
AAvg-A/C      1 6.527653E+12
ASorties      1  10400006144

Unusual Observations
Obs.AAvg-A/C  OG30TAdj     Fit  Stdev.Fit  Residual  St.Resid
 4      30.0   5833935 5817402     241200     16533    1.00 X

X denotes an obs. whose X value gives it large influence.
```

C. ANALYSIS OF OG-41 COSTS FOR THE HU-25A.

```
           OG41  Flt-Hrs  Sorties
Flt-Hrs   0.328
Sorties   0.407    0.949
Avg-A/C  -0.372    0.951    0.953


The regression equation is
OG41 = -40798912 + 2959 Flt-Hrs

Predictor        Coef        Stdev     t-ratio
Constant    -40798912    100968656       -0.40
Flt-Hrs          2959         4925        0.60

s = 11920362    R-sq = 10.7%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 5.128911E+13 5.128911E+13
Error         3 4.262849E+14 1.420950E+14
Total         4 4.775738E+14
```

```
The regression equation is
OG41 = -93684464 + 13116 Sorties

Predictor       Coef         Stdev     t-ratio
Constant   -93684464     147041776       -0.64
Sorties        13116         16987        0.77

s = 11523961    R-sq = 16.6%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 7.916920E+13 7.916920E+13
Error         3 3.984049E+14 1.328016E+14
Total         4 4.775741E+14


The regression equation is
OG41 =1.08E+08 - 2723428 Avg-A/C

Predictor       Coef         Stdev     t-ratio
Constant   108272544     127771520        0.85
Avg-A/C     -2723428       3928851       -0.69

s = 11713836    R-sq = 13.8%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 6.593236E+13 6.593236E+13
Error         3 4.116417E+14 1.372139E+14
Total         4 4.775741E+14


The regression equation is
OG41 = -2.52E+08 - 16187 Flt-Hrs + 69707 Sorties

Predictor       Coef         Stdev     t-ratio
Constant  -251860224     310864128       -0.81
Flt-Hrs       -16187         26914       -0.60
Sorties        69707         96025        0.73

s = 12988227    R-sq = 29.4%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    2 1.401862E+14 7.009308E+13
Error         2 3.373879E+14 1.686940E+14
Total         4 4.775741E+14

SOURCE       DF      SEQ SS
Flt-Hrs       1 5.128911E+13
Sorties       1 8.889703E+13
```

```
The regression equation is
OG41 = -2.52E+08 + 69707 Sorties - 16187 Flt-Hrs

Predictor        Coef          Stdev     t-ratio
Constant   -251860224      310864128       -0.81
Sorties         69707          96025        0.73
Flt-Hrs        -16187          26914       -0.60

s = 12988227    R-sq = 29.4%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 1.401862E+14 7.009308E+13
Error          2 3.373879E+14 1.686940E+14
Total          4 4.775741E+14

SOURCE        DF        SEQ SS
Sorties        1 7.916920E+13
Flt-Hrs        1 6.101696E+13


The regression equation is
OG41 =53956304 + 4440 Flt-Hrs - 3849050 Avg-A/C

Predictor        Coef          Stdev     t-ratio
Constant     53956304      150469328        0.36
Flt-Hrs          4440           5392        0.82
Avg-A/C      -3849050        4377374       -0.88

s = 12398272    R-sq = 35.6%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 1.701399E+14 8.506996E+13
Error          2 3.074343E+14 1.537171E+14
Total          4 4.775741E+14

SOURCE        DF        SEQ SS
Flt-Hrs        1 5.128911E+13
Avg-A/C        1 1.188508E+14
```

```
The regression equation is
OG41 =53956304 - 3849050 Avg-A/C + 4440 Flt-Hrs

Predictor       Coef         Stdev     t-ratio
Constant    53956304     150469328        0.36
Avg-A/C     -3849050       4377373       -0.88
Flt-Hrs         4440          5392        0.82

s = 12398272    R-sq = 35.6%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 1.701399E+14 8.506996E+13
Error         2 3.074343E+14 1.537171E+14
Total         4 4.775741E+14

SOURCE       DF       SEQ SS
Avg-A/C       1 6.593236E+13
Flt-Hrs       1 1.042076E+14
```

```
The regression equation is
OG41 = -10855380 + 19318 Sorties - 4200317 Avg-A/C

Predictor       Coef         Stdev     t-ratio
Constant   -10855380     165829216       -0.07
Sorties        19318         17820        1.08
Avg-A/C     -4200317       4054590       -1.04

s = 11385939    R-sq = 45.7%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 2.182950E+14 1.091475E+14
Error         2 2.592792E+14 1.296396E+14
Total         4 4.775741E+14

SOURCE       DF       SEQ SS
Sorties       1 7.916920E+13
Avg-A/C       1 1.391258E+14
```

```
The regression equation is
OG41 = -10855380 - 4200317 Avg-A/C + 19318 Sorties

Predictor        Coef          Stdev     t-ratio
Constant    -10855380      165829216       -0.07
Avg-A/C      -4200317        4054589       -1.04
Sorties         19318          17820        1.08

s = 11385939    R-sq = 45.7%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 2.182950E+14 1.091475E+14
Error          2 2.592792E+14 1.296396E+14
Total          4 4.775741E+14

SOURCE        DF        SEQ SS
Avg-A/C        1 6.593236E+13
Sorties        1 1.523627E+14
```

D. ANALYSIS OF OG-42 COSTS FOR THE HU-25A.

```
        OG42Adj AFlt-Hrs ASorties
AFlt-Hrs  0.866
ASorties  0.914    0.949
AAvg-A/C  0.977    0.951    0.953


The regression equation is
OG42Adj = 3431087 - 369952 AFlt-Hrs

Predictor        Coef          Stdev     t-ratio
Constant      3431087        1495103        2.29
AFlt-Hrs      -369952        1400240       -0.26

s = 2877143     R-sq = 3.4%      R-sq(adj) = 0.0%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 577841004544 577841004544
Error          2 1.655591E+13 8.277954E+12
Total          3 1.713375E+13
```

```
The regression equation is
OG42Adj = -73718336 + 8787 ASorties

Predictor        Coef        Stdev     t-ratio
Constant   -73718336      24143984       -3.05
ASorties        8787          2753        3.19

s = 1185650     R-sq = 83.6%     R-sq(adj) = 75.4%

Analysis of Variance
SOURCE       DF          SS            MS
Regression    1 1.432221E+13 1.432221E+13
Error         2 2.811534E+12 1.405767E+12
Total         3 1.713375E+13

Unusual Observations
Obs.ASorties   OG42Adj     Fit  Stdev.Fit  Residual  St.Resid
 4      8397     89942   63623    1180883     26319    0.25 X

X denotes an obs. whose X value gives it large influence.


OG42Adj = -42756912 + 1427190 AAvg-A/C

Predictor        Coef        Stdev     t-ratio
Constant   -42756912       7048636       -6.07
AAvg-A/C     1427190        218098        6.54

s = 618279      R-sq = 95.5%     R-sq(adj) = 93.3%

Analysis of Variance
SOURCE       DF          SS            MS
Regression    1 1.636921E+13 1.636921E+13
Error         2 764537864192 382268932096
Total         3 1.713375E+13
```

```
The regression equation is
OG42Adj = -84280544 + 559293 AFlt-Hrs + 9973 ASorties

Predictor        Coef          Stdev     t-ratio
Constant    -84280544       30180336       -2.79
AFlt-Hrs       559293         719102        0.78
ASorties         9973           3431        2.91

s = 1323564     R-sq = 89.8%     R-sq(adj) = 69.3%

Analysis of Variance
SOURCE       DF           SS             MS
Regression    2 1.538193E+13 7.690963E+12
Error         1 1.751822E+12 1.751822E+12
Total         3 1.713375E+13

SOURCE       DF       SEQ SS
AFlt-Hrs      1 577841004544
ASorties      1 1.480409E+13

Unusual Observations
Obs.AFlt-Hrs   OG42Adj      Fit  Stdev.Fit   Residual   St.Resid
 4      1.22     89942   145206    1322409     -55264    -1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG42Adj = -84280544 + 9973 ASorties + 559293 AFlt-Hrs

Predictor        Coef          Stdev     t-ratio
Constant    -84280544       30180336       -2.79
ASorties         9973           3431        2.91
AFlt-Hrs       559293         719102        0.78

s = 1323564     R-sq = 89.8%     R-sq(adj) = 69.3%

Analysis of Variance
SOURCE       DF           SS             MS
Regression    2 1.538193E+13 7.690963E+12
Error         1 1.751822E+12 1.751822E+12
Total         3 1.713375E+13

SOURCE       DF       SEQ SS
ASorties      1 1.432221E+13
AFlt-Hrs      1 1.059712E+12

Unusual Observations
Obs.ASorties  OG42Adj      Fit  Stdev.Fit   Residual    St.Resid
 4      8397    89942   145206    1322409     -55264     -1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG42Adj = -42618096 - 32156 AFlt-Hrs + 1423181 AAvg-A/C

Predictor        Coef        Stdev     t-ratio
Constant    -42618096     10113071       -4.21
AFlt-Hrs       -32156       430782       -0.07
AAvg-A/C      1423181       312237        4.56

s = 871953      R-sq = 95.6%     R-sq(adj) = 86.7%

Analysis of Variance
SOURCE        DF           SS           MS
Regression     2 1.637345E+13 8.186724E+12
Error          1 760301420544 760301420544
Total          3 1.713375E+13

SOURCE        DF       SEQ SS
AFlt-Hrs       1 577841004544
AAvg-A/C       1 1.579561E+13

Unusual Observations
Obs.AFlt-Hrs  OG42Adj    Fit  Stdev.Fit  Residual  St.Resid
 4      1.22    89942  52211     871136     37731    1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG42Adj = -42618096 + 1423181 AAvg-A/C - 32156 AFlt-Hrs

Predictor        Coef        Stdev     t-ratio
Constant    -42618096     10113071       -4.21
AAvg-A/C      1423181       312237        4.56
AFlt-Hrs       -32156       430782       -0.07

s = 871953      R-sq = 95.6%     R-sq(adj) = 86.7%

Analysis of Variance
SOURCE        DF           SS           MS
Regression     2 1.637345E+13 8.186724E+12
Error          1 760301420544 760301420544
Total          3 1.713375E+13

SOURCE        DF       SEQ SS
AAvg-A/C       1 1.636921E+13
AFlt-Hrs       1   4236489984

Unusual Observations
Obs.AAvg-A/C  OG42Adj    Fit  Stdev.Fit  Residual  St.Resid
 4       30.    89942  52211     871136     37731    1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG42Adj = -35366224 - 1806 ASorties + 1688646 AAvg-A/C

Predictor        Coef          Stdev     t-ratio
Constant    -35366224       28108032       -1.26
ASorties        -1806           6454       -0.28
AAvg-A/C      1688646         980637        1.72

s = 842048      R-sq = 95.9%     R-sq(adj) = 87.6%

Analysis of Variance
SOURCE        DF           SS           MS
Regression     2 1.642471E+13 8.212353E+12
Error          1 709044076544 709044076544
Total          3 1.713375E+13

SOURCE        DF       SEQ SS
ASorties       1 1.432221E+13
AAvg-A/C       1 2.102490E+12

Unusual Observations
Obs.ASorties  OG42Adj     Fit  Stdev.Fit   Residual   St.Resid
 4      8397    89942  147522     840076     -57580   -1.00 X

X denotes an obs. whose X value gives it large influence.


The regression equation is
OG42Adj = -35366224 + 1688646 AAvg-A/C - 1806 ASorties

Predictor        Coef          Stdev     t-ratio
Constant    -35366224       28108032       -1.26
AAvg-A/C      1688646         980637        1.72
ASorties        -1806           6454       -0.28

s = 842048      R-sq = 95.9%     R-sq(adj) = 87.6%

Analysis of Variance
SOURCE        DF           SS           MS
Regression     2 1.642471E+13 8.212353E+12
Error          1 709044076544 709044076544
Total          3 1.713375E+13

SOURCE        DF       SEQ SS
AAvg-A/C       1 1.636921E+13
ASorties       1  55493779456

Unusual Observations
Obs.AAvg-A/C  OG42Adj     Fit  Stdev.Fit   Residual   St.Resid
 4      30.0    89942  147522     840076     -57580   -1.00 X

X denotes an obs. whose X value gives it large influence.
```

E. ANALYSIS OF TOTAL OE COSTS FOR THE HH-65A.

```
        TotalOE  Flt-Hrs  Sorties
Flt-Hrs   0.971
Sorties   0.972    1.000
Avg-A/C   0.972    1.000    1.000


The regression equation is
TotalOE = 3889410 + 987 Flt-Hrs

Predictor       Coef         Stdev     t-ratio
Constant     3889410       5052182        0.77
Flt-Hrs        987.3         242.0        4.08

s = 2706730     R-sq = 94.3%     R-sq(adj) = 88.7%

Analysis of Variance
SOURCE        DF          SS            MS
Regression     1 1.219633E+14 1.219633E+14
Error          1 7.326392E+12 7.326392E+12
Total          2 1.292897E+14


The regression equation is
TotalOE = 5279717 + 1321 Sorties

Predictor       Coef         Stdev     t-ratio
Constant     5279717       4636549        1.14
Sorties       1320.6         317.3        4.16

s = 2656260     R-sq = 94.5%     R-sq(adj) = 89.1%

Analysis of Variance
SOURCE        DF          SS            MS
Regression     1 1.222339E+14 1.222339E+14
Error          1 7.055719E+12 7.055719E+12
Total          2 1.292897E+14
```

```
The regression equation is
TotalOE = 5685976 + 437061 Avg-A/C

Predictor         Coef          Stdev     t-ratio
Constant       5685976        4537399        1.25
Avg-A/C         437061         104840        4.17

s = 2652282     R-sq = 94.6%     R-sq(adj) = 89.1%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 1.222551E+14 1.222551E+14
Error          1 7.034601E+12 7.034601E+12
Total          2 1.292897E+14
```

F. ANALYSIS OF OG-30 COSTS FOR THE HH-65A.

```
       OG30TOTL  Flt-Hrs  Sorties    .
Flt-Hrs   0.940
Sorties   0.942    1.000
Avg-A/C   0.942    1.000    1.000


The regression equation is
OG30TOTL = 1467987 + 288 Flt-Hrs

Predictor         Coef          Stdev     t-ratio
Constant       1467987        2177245        0.67
Flt-Hrs          287.6          104.3        2.76

s = 1166469     R-sq = 88.4%     R-sq(adj) = 76.8%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 1.034942E+13 1.034942E+13
Error          1 1.360651E+12 1.360651E+12
Total          2 1.171007E+13
```

```
The regression equation is
OG30TOTL = 1870142 + 385 Sorties

Predictor        Coef         Stdev     t-ratio
Constant      1870142       2010423        0.93
Sorties         384.9         137.6        2.80

s = 1151763     R-sq = 88.7%     R-sq(adj) = 77.3%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 1.038351E+13 1.038351E+13
Error          1 1.326559E+12 1.326559E+12
Total          2 1.171007E+13


The regression equation is
OG30TOTL = 1988331 + 127390 Avg-A/C

Predictor        Coef         Stdev     t-ratio
Constant      1988331       1968398        1.01
Avg-A/C        127390         45482        2.80

s = 1150604     R-sq = 88.7%     R-sq(adj) = 77.4%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 1.038618E+13 1.038618E+13
Error          1 1.323889E+12 1.323889E+12
Total          2 1.171007E+13
```

G. ANALYSIS OF OG-41 COSTS FOR THE HH-65A.

```
             OG41   Flt-Hrs   Sorties
Flt-Hrs     0.987
Sorties     0.987     1.000
Avg-A/C     0.988     1.000     1.000
```

```
The regression equation is
OG41 = - 377652 + 722 Flt-Hrs

Predictor       Coef         Stdev     t-ratio
Constant     -377652       2478716       -0.15
Flt-Hrs        722.0         118.7        6.08

s = 1327984     R-sq = 97.4%     R-sq(adj) = 94.7%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 6.523436E+13 6.523436E+13
Error         1 1.763541E+12 1.763541E+12
Total         2 6.699790E+13
```

```
The regression equation is
OG41 = 644048 + 965 Sorties

Predictor       Coef         Stdev     t-ratio
Constant      644048       2253602        0.29
Sorties        965.5         154.2        6.26

s = 1291079     R-sq = 97.5%     R-sq(adj) = 95.0%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 6.533102E+13 6.533102E+13
Error         1 1.666886E+12 1.666886E+12
Total         2 6.699790E+13
```

```
The regression equation is
OG41 = 941432 + 319517 Avg-A/C

Predictor       Coef         Stdev     t-ratio
Constant      941432       2203742        0.43
Avg-A/C       319517         50919        6.27

s = 1288171     R-sq = 97.5%     R-sq(adj) = 95.0%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 6.533852E+13 6.533852E+13
Error         1 1.659385E+12 1.659385E+12
Total         2 6.699790E+13
```

H. ANALYSIS OF OG-42 COSTS FOR THE HH-65A.

```
               OG42   Flt-Hrs   Sorties
Flt-Hrs     -0.762
Sorties     -0.759     1.000
Avg-A/C     -0.759     1.000     1.000


The regression equation is
OG42 = 2799063 - 22.4 Flt-Hrs

Predictor          Coef           Stdev      t-ratio
Constant        2799063          396219         7.06
Flt-Hrs          -22.36           18.98        -1.18

s = 212276       R-sq = 58.1%     R-sq(adj) = 16.3%

Analysis of Variance
SOURCE         DF            SS            MS
Regression      1   62560428032   62560428032
Error           1   45061246976   45061246976
Total           2  107621646336


The regression equation is
OG42 = 2765516 - 29.8 Sorties

Predictor          Coef           Stdev      t-ratio
Constant        2765516          372522         7.42
Sorties          -29.76           25.49        -1.17

s = 213417       R-sq = 57.7%     R-sq(adj) = 15.4%

Analysis of Variance
SOURCE         DF            SS            MS
Regression      1   62075043840   62075043840
Error           1   45546631168   45546631168
Total           2  107621646336
```

```
The regression equation is
OG42 = 2756203 - 9845 Avg-A/C

Predictor        Coef          Stdev     t-ratio
Constant      2756203         365256        7.55
Avg-A/C         -9845           8440       -1.17

s = 213506      R-sq = 57.6%     R-sq(adj) = 15.3%

Analysis of Variance
SOURCE       DF           SS             MS
Regression    1  62036779008    62036779008
Error         1  45584896000    45584896000
Total         2 107621646336
```

I. ANALYSIS OF TOTAL OE COSTS FOR THE 270 WMEC.

```
                         DAYS          RES   DAYS   AVG
          TOTLOE  DAFHP  U/W   MSNS   HRS    AFO    NO     FY
DAFHP     0.837
Days-U/W  0.976  0.922
Missions  0.985  0.883  0.990
Res-Hrs   0.981  0.907  0.999  0.995
DaysAFO   0.951  0.956  0.994  0.975  0.990
Avg-No    0.937  0.959  0.973  0.940  0.963  0.983
FY        0.979  0.923  0.991  0.976  0.987  0.985  0.988
Inv-Cost  0.874  0.819  0.849  0.820  0.840  0.850  0.922  0.906


The regression equation is
TotalOE = - 663602 + 6411 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant      -663602        1946324       -0.34
DAFHP            6411           2097        3.06

s = 2176314     R-sq = 70.0%     R-sq(adj) = 62.5%

Analysis of Variance
SOURCE       DF           SS             MS
Regression    1 4.427675E+13 4.427675E+13
Error         4 1.894537E+13 4.736342E+12
Total         5 6.322212E+13
```

```
The regression equation is
TotalOE = 258085 + 8367 Days-U/W

Predictor       Coef         Stdev     t-ratio
Constant      258085        606298        0.43
Days-U/W      8366.7         939.5        8.91

s = 871137      R-sq = 95.2%     R-sq(adj) = 94.0%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 6.018662E+13 6.018662E+13
Error         4 3.035517E+12 758879354880
Total         5 6.322212E+13


The regression equation is
TotalOE = 569437 + 21027 Missions

Predictor       Coef         Stdev     t-ratio
Constant      569437        448416        1.27
Missions       21027          1824       11.53

s = 679531      R-sq = 97.1%     R-sq(adj) = 96.3%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 6.137508E+13 6.137508E+13
Error         4 1.847050E+12 461762461696
Total         5 6.322212E+13


The regression equation is
TotalOE = 480483 + 415 Res-Hrs

Predictor       Coef         Stdev     t-ratio
Constant      480483        523340        0.92
Res-Hrs       414.79         41.50        9.99

s = 780090      R-sq = 96.1%     R-sq(adj) = 95.2%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 6.078796E+13 6.078796E+13
Error         4 2.434164E+12 608541081600
Total         5 6.322212E+13
```

```
The regression equation is
TotalOE = 440124 + 6168 DaysAFO

Predictor        Coef         Stdev     t-ratio
Constant       440124        846926        0.52
DaysAFO          6168          1004        6.15

s = 1230271     R-sq = 90.4%     R-sq(adj) = 88.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    1 5.716786E+13 5.716786E+13
Error         4 6.054269E+12 1.513567E+12
Total         5 6.322212E+13


The regression equation is
TotalOE = - 769692 + 1101822 Avg-No

Predictor        Coef         Stdev     t-ratio
Constant      -769692       1151875       -0.67
Avg-No        1101822        204739        5.38

s = 1384941     R-sq = 87.9%     R-sq(adj) = 84.8%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    1 5.554988E+13 5.554988E+13
Error         4 7.672246E+12 1.918062E+12
Total         5 6.322212E+13


The regression equation is
TotalOE = -1.54E+08 + 1860123 FY

Predictor        Coef         Stdev     t-ratio
Constant   -154409456      16705156       -9.24
FY            1860123        195343        9.52

s = 817178      R-sq = 95.8%     R-sq(adj) = 94.7%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    1 6.055100E+13 6.055100E+13
Error         4 2.671123E+12 667780644864
Total         5 6.322212E+13
```

```
The regression equation is
TotalOE = -61073808 + 0.0894 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant    -61073808       18268960       -3.34
Inv-Cost      0.08941        0.02484        3.60

s = 1930779      R-sq = 76.4%     R-sq(adj) = 70.5%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 4.831050E+13 4.831050E+13
Error          4 1.491164E+13 3.727909E+12
Total          5 6.322212E+13


The regression equation is
TotalOE = -13968583 + 17483 Missions + 0.0207 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant    -13968583        9095319       -1.54
Missions        17483           2702        6.47
Inv-Cost      0.02071        0.01295        1.60

s = 576403       R-sq = 98.4%     R-sq(adj) = 97.4%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 6.222542E+13 3.111271E+13
Error          3 996721229824 332240388096
Total          5 6.322214E+13

SOURCE        DF        SEQ SS
Missions       1 6.137508E+13
Inv-Cost       1 850328813568
```

```
The regression equation is
TotalOE = -13968583 + 0.0207 Inv-Cost + 17483 Missions

Predictor         Coef          Stdev     t-ratio
Constant     -13968583        9095320       -1.54
Inv-Cost       0.02071        0.01295        1.60
Missions         17483           2702        6.47

s = 576403       R-sq = 98.4%     R-sq(adj) = 97.4%

Analysis of Variance
SOURCE         DF            SS            MS
Regression      2 6.222542E+13 3.111271E+13
Error           3 996721229824 332240388096
Total           5 6.322214E+13

SOURCE         DF        SEQ SS
Inv-Cost        1 4.831050E+13
Missions        1 1.391491E+13


The regression equation is
TotalOE = -11814049 + 354 Res-Hrs + 0.0176 Inv-Cost

Predictor         Coef          Stdev     t-ratio
Constant     -11814049       13165031       -0.90
Res-Hrs         353.79          77.71        4.55
Inv-Cost       0.01756        0.01879        0.93

s = 792721       R-sq = 97.0%     R-sq(adj) = 95.0%

Analysis of Variance
SOURCE         DF            SS            MS
Regression      2 6.133691E+13 3.066845E+13
Error           3 1.885219E+12 628406353920
Total           5 6.322212E+13

SOURCE         DF        SEQ SS
Res-Hrs         1 6.078796E+13
Inv-Cost        1 548945657856
```

```
The regression equation is
TotalOE = -11474528 + 7170 Days-U/W + 0.0168 Inv-Cost

Predictor        Coef         Stdev     t-ratio
Constant    -11474528      15688237       -0.73
Days-U/W         7170          1884        3.81
Inv-Cost      0.01682       0.02247        0.75

s = 923373       R-sq = 96.0%     R-sq(adj) = 93.3%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2  6.066428E+13  3.033213E+13
Error          3  2.557851E+12  852617068544
Total          5  6.322212E+13

SOURCE        DF        SEQ SS
Days-U/W       1  6.018662E+13
Inv-Cost       1  477665820672


The regression equation is
TotalOE = -11474528 + 0.0168 Inv-Cost + 7170 Days-U/W

Predictor        Coef         Stdev     t-ratio
Constant    -11474528      15688237       -0.73
Inv-Cost      0.01682       0.02247        0.75
Days-U/W         7170          1884        3.81

s = 923373       R-sq = 96.0%     R-sq(adj) = 93.3%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2  6.066428E+13  3.033213E+13
Error          3  2.557851E+12  852617068544
Total          5  6.322212E+13

SOURCE        DF        SEQ SS
Inv-Cost       1  4.831050E+13
Days-U/W       1  1.235378E+13
```

```
The regression equation is
TotalOE = -1.60E+08 + 1984989 FY - 0.0074 Inv-Cost

Predictor       Coef          Stdev     t-ratio
Constant  -159637904       27669584       -5.77
FY           1984989         528112        3.76
Inv-Cost    -0.00741        0.02842       -0.26

s = 933075      R-sq = 95.9%     R-sq(adj) = 93.1%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 6.061024E+13 3.030512E+13
Error         3 2.611885E+12 870628458496
Total         5 6.322212E+13

SOURCE       DF       SEQ SS
FY            1 6.055100E+13
Inv-Cost      1  59237355520


The regression equation is
TotalOE = -1.60E+08 - 0.0074 Inv-Cost + 1984989 FY

Predictor       Coef          Stdev     t-ratio
Constant  -159637904       27669584       -5.77
Inv-Cost    -0.00741        0.02842       -0.26
FY           1984989         528112        3.76

s = 933075      R-sq = 95.9%     R-sq(adj) = 93.1%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 6.061024E+13 3.030512E+13
Error         3 2.611885E+12 870628458496
Total         5 6.322212E+13

SOURCE       DF       SEQ SS
Inv-Cost      1 4.831050E+13
FY            1 1.229975E+13
```

```
The regression equation is
TotalOE = -16472210 + 4862 DaysAFO + 0.0242 Inv-Cost

Predictor          Coef           Stdev      t-ratio
Constant      -16472210        22207808        -0.74
DaysAFO            4862            2015         2.41
Inv-Cost        0.02422         0.03178         0.76

s = 1300273      R-sq = 92.0%     R-sq(adj) = 86.6%

Analysis of Variance
SOURCE         DF           SS            MS
Regression      2 5.815000E+13 2.907500E+13
Error           3 5.072135E+12 1.690711E+12
Total           5 6.322212E+13

SOURCE         DF       SEQ SS
DaysAFO         1 5.716786E+13
Inv-Cost        1 982133768192


The regression equation is
TotalOE = -16472210 + 0.0242 Inv-Cost + 4862 DaysAFO

Predictor          Coef           Stdev      t-ratio
Constant      -16472210        22207808        -0.74
Inv-Cost        0.02422         0.03178         0.76
DaysAFO            4862            2015         2.41

s = 1300273      R-sq = 92.0%     R-sq(adj) = 86.6%

Analysis of Variance
SOURCE         DF           SS            MS
Regression      2 5.815000E+13 2.907500E+13
Error           3 5.072135E+12 1.690711E+12
Total           5 6.322212E+13

SOURCE         DF       SEQ SS
Inv-Cost        1 4.831050E+13
DaysAFO         1 9.839500E+12
```

```
The regression equation is
TotalOE = - 5245363 + 1032352 Avg-No + 0.0066 Inv-Cost

Predictor       Coef        Stdev     t-ratio
Constant    -5245363     36297008       -0.14
Avg-No       1032352       610407        1.69
Inv-Cost     0.00655      0.05311        0.12

s = 1595149     R-sq = 87.9%     R-sq(adj) = 79.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 5.558862E+13 2.779431E+13
Error         3 7.633506E+12 2.544502E+12
Total         5 6.322212E+13

SOURCE       DF       SEQ SS
Avg-No        1 5.554988E+13
Inv-Cost      1  38739804160


The regression equation is
TotalOE = - 5245363 + 0.0066 Inv-Cost + 1032352 Avg-No

Predictor       Coef        Stdev     t-ratio
Constant    -5245363     36297008       -0.14
Inv-Cost     0.00655      0.05311        0.12
Avg-No       1032352       610407        1.69

s = 1595149     R-sq = 87.9%     R-sq(adj) = 79.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 5.558862E+13 2.779431E+13
Error         3 7.633506E+12 2.544502E+12
Total         5 6.322212E+13

SOURCE       DF       SEQ SS
Inv-Cost      1 4.831050E+13
Avg-No        1 7.278129E+12
```

```
The regression equation is
TotalOE = -40782480 + 2815 DAFHP + 0.0586 Inv-Cost

Predictor       Coef         Stdev     t-ratio
Constant   -40782480      30838640       -1.32
DAFHP           2815          3370        0.84
Inv-Cost     0.05863       0.04499        1.30

s = 2008108     R-sq = 80.9%     R-sq(adj) = 68.1%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 5.112464E+13 2.556232E+13
Error         3 1.209750E+13 4.032499E+12
Total         5 6.322214E+13

SOURCE       DF       SEQ SS
DAFHP         1 4.427675E+13
Inv-Cost      1 6.847884E+12
```

```
The regression equation is
TotalOE = -40782480 + 0.0586 Inv-Cost + 2815 DAFHP

Predictor       Coef         Stdev     t-ratio
Constant   -40782480      30838640       -1.32
Inv-Cost     0.05863       0.04499        1.30
DAFHP           2815          3370        0.84

s = 2008108     R-sq = 80.9%     R-sq(adj) = 68.1%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 5.112464E+13 2.556232E+13
Error         3 1.209750E+13 4.032499E+12
Total         5 6.322214E+13

SOURCE       DF       SEQ SS
Inv-Cost      1 4.831050E+13
DAFHP         1 2.814137E+12
```

```
The regression equation is
TotalOE = 1174254 + 11666 Days-U/W - 3198 DAFHP

Predictor        Coef         Stdev     t-ratio
Constant      1174254        676136        1.74
Days-U/W        11666          1890        6.17
DAFHP           -3198          1688       -1.89

s = 678812      R-sq = 97.8%     R-sq(adj) = 96.4%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 6.183978E+13 3.091989E+13
Error          3 1.382357E+12 460785516544
Total          5 6.322212E+13

SOURCE        DF        SEQ SS
Days-U/W       1 6.018662E+13
DAFHP          1 1.653160E+12


The regression equation is
TotalOE = 1174254 - 3198 DAFHP + 11666 Days-U/W

Predictor        Coef         Stdev     t-ratio
Constant      1174254        676136        1.74
DAFHP           -3198          1688       -1.89
Days-U/W        11666          1890        6.17

s = 678812      R-sq = 97.8%     R-sq(adj) = 96.4%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 6.183978E+13 3.091989E+13
Error          3 1.382357E+12 460785516544
Total          5 6.322212E+13

SOURCE        DF        SEQ SS
DAFHP          1 4.427675E+13
Days-U/W       1 1.756303E+13
```

```
The regression equation is
TotalOE = 969867 + 23833 Missions - 1141 DAFHP

Predictor        Coef         Stdev     t-ratio
Constant       969867        698847        1.39
Missions        23833          4089        5.83
DAFHP           -1141          1468       -0.78

s = 715841      R-sq = 97.6%     R-sq(adj) = 95.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 6.168486E+13 3.084243E+13
Error         3 1.537284E+12 512427884544
Total         5 6.322214E+13

SOURCE       DF       SEQ SS
Missions      1 6.137508E+13
DAFHP         1 309766062080


The regression equation is
TotalOE = 969867 - 1141 DAFHP + 23833 Missions

Predictor        Coef         Stdev     t-ratio
Constant       969867        698847        1.39
DAFHP           -1141          1468       -0.78
Missions        23833          4089        5.83

s = 715841      R-sq = 97.6%     R-sq(adj) = 95.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 6.168486E+13 3.084243E+13
Error         3 1.537284E+12 512427884544
Total         5 6.322214E+13

SOURCE       DF       SEQ SS
DAFHP         1 4.427675E+13
Missions      1 1.740810E+13
```

```
The regression equation is
TotalOE = 1224069 + 530 Res-Hrs - 2291 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant      1224069         692694        1.77
Res-Hrs        529.59          87.52        6.05
DAFHP           -2291           1585       -1.45

s = 691552       R-sq = 97.7%     R-sq(adj) = 96.2%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 6.178740E+13 3.089370E+13
Error          3 1.434733E+12 478244306944
Total          5 6.322212E+13

SOURCE        DF        SEQ SS
Res-Hrs        1 6.078796E+13
DAFHP          1 999431340032
```

```
The regression equation is
TotalOE = 1224069 - 2291 DAFHP + 530 Res-Hrs

Predictor        Coef          Stdev     t-ratio
Constant      1224069         692694        1.77
DAFHP           -2291           1585       -1.45
Res-Hrs        529.59          87.52        6.05

s = 691552       R-sq = 97.7%     R-sq(adj) = 96.2%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 6.178740E+13 3.089370E+13
Error          3 1.434733E+12 478244306944
Total          5 6.322212E+13

SOURCE        DF        SEQ SS
DAFHP          1 4.427675E+13
Res-Hrs        1 1.751065E+13
```

```
The regression equation is
TotalOE = 2222563 + 11400 DaysAFO - 6463 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant      2222563         974155        2.28
DaysAFO         11400           2382        4.78
DAFHP           -6463           2814       -2.30

s = 855344      R-sq = 96.5%     R-sq(adj) = 94.2%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 6.102729E+13 3.051365E+13
Error          3 2.194839E+12 731613102080
Total          5 6.322212E+13

SOURCE        DF        SEQ SS
DaysAFO        1 5.716786E+13
DAFHP          1 3.859430E+12


The regression equation is
TotalOE = - 146052 + 1980644 Avg-No - 5971 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant      -146052        1120702       -0.13
Avg-No        1980644         647870        3.06
DAFHP           -5971           4223       -1.41

s = 1238751     R-sq = 92.7%     R-sq(adj) = 87.9%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 5.861862E+13 2.930931E+13
Error          3 4.603516E+12 1.534505E+12
Total          5 6.322212E+13

SOURCE        DF        SEQ SS
Avg-No         1 5.554988E+13
DAFHP          1 3.068729E+12
```

```
The regression equation is
TotalOE = - 146052 - 5971 DAFHP + 1980644 Avg-No

Predictor        Coef          Stdev     t-ratio
Constant      -146052        1120702       -0.13
DAFHP           -5971           4223       -1.41
Avg-No        1980644         647870        3.06

s = 1238751     R-sq = 92.7%     R-sq(adj) = 87.9%

Analysis of Variance
SOURCE         DF          SS           MS
Regression      2 5.861862E+13 2.930931E+13
Error           3 4.603516E+12 1.534505E+12
Total           5 6.322212E+13

SOURCE         DF      SEQ SS
DAFHP           1 4.427675E+13
Avg-No          1 1.434187E+13


The regression equation is
TotalOE = -2.19E+08 + 2647748 FY - 3439 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant   -218911040       26200352       -8.36
FY            2647748         317811        8.33
DAFHP           -3439           1281       -2.68

s = 511511      R-sq = 98.8%     R-sq(adj) = 97.9%

Analysis of Variance
SOURCE         DF          SS           MS
Regression      2 6.243720E+13 3.121859E+13
Error           3 784931422208 261643763712
Total           5 6.322212E+13

SOURCE         DF      SEQ SS
FY              1 6.055100E+13
DAFHP           1 1.886191E+12
```

```
The regression equation is
TotalOE = -2.19E+08 - 3439 DAFHP + 2647748 FY

Predictor       Coef        Stdev     t-ratio
Constant  -218911040     26200352       -8.36
DAFHP          -3439         1281       -2.68
FY           2647748       317811        8.33

s = 511511      R-sq = 98.8%     R-sq(adj) = 97.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression     2 6.243720E+13 3.121859E+13
Error          3 784931422208 261643763712
Total          5 6.322212E+13

SOURCE       DF       SEQ SS
DAFHP          1 4.427675E+13
FY             1 1.816045E+13
```

J. ANALYSIS OF OG-30 COSTS FOR THE 270 WMEC.

```
                      DAYS         RES  DAYS   AVG
      OG30TOTL DAFHP   U/W  MSNS   HRS   AFO    NO     FY
DAFHP    0.879
Days-U/W 0.993 0.922
Missions 0.988 0.883 0.990
Res-Hrs  0.994 0.907 0.999 0.995
DaysAFO  0.977 0.956 0.994 0.975 0.990
Avg-No   0.962 0.959 0.973 0.940 0.963 0.983
FY       0.991 0.923 0.991 0.976 0.987 0.985 0.988
Inv-Cost 0.871 0.819 0.849 0.820 0.840 0.850 0.922 0.906
```

```
The regression equation is
OG30TOTL = - 641343 + 5103 DAFHP

Predictor       Coef        Stdev     t-ratio
Constant     -641343      1281611       -0.50
DAFHP           5103         1381        3.70

s = 1433055     R-sq = 77.3%     R-sq(adj) = 71.7%

Analysis of Variance
SOURCE       DF           SS           MS
Regression     1 2.804498E+13 2.804498E+13
Error          4 8.214588E+12 2.053647E+12
Total          5 3.625956E+13
```

```
The regression equation is
OG30TOTL = 202303 + 6448 Days-U/W

Predictor       Coef         Stdev     t-ratio
Constant      202303        248830        0.81
Days-U/W      6448.1         385.6       16.72

s = 357522      R-sq = 98.6%     R-sq(adj) = 98.2%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1 3.574827E+13 3.574827E+13
Error         4 511287951360 127821938688
Total         5 3.625956E+13
```

```
The regression equation is
OG30TOTL = 487291 + 15972 Missions

Predictor       Coef         Stdev     t-ratio
Constant      487291        303608        1.61
Missions       15972          1235       12.93

s = 460089      R-sq = 97.7%     R-sq(adj) = 97.1%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1 3.541284E+13 3.541284E+13
Error         4 846726168576 211681542144
Total         5 3.625956E+13
```

```
The regression equation is
OG30TOTL = 387191 + 318 Res-Hrs

Predictor       Coef         Stdev     t-ratio
Constant      387191        226997        1.71
Res-Hrs       318.32         18.00       17.68

s = 338362      R-sq = 98.7%     R-sq(adj) = 98.4%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1 3.580161E+13 3.580161E+13
Error         4 457955475456 114488836096
Total         5 3.625956E+13
```

```
The regression equation is
OG3OTOTL = 312991 + 4797 DaysAFO

Predictor       Coef       Stdev    t-ratio
Constant      312991      445997       0.70
DaysAFO       4796.9       528.5       9.08

s = 647868      R-sq = 95.4%     R-sq(adj) = 94.2%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 3.458063E+13 3.458063E+13
Error         4 1.678934E+12 419733438464
Total         5 3.625956E+13
```

```
The regression equation is
OG3OTOTL = - 627013 + 856753 Avg-No

Predictor       Coef       Stdev    t-ratio
Constant     -627013      679840      -0.92
Avg-No        856753      120838       7.09

s = 817396      R-sq = 92.6%     R-sq(adj) = 90.8%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 3.358701E+13 3.358701E+13
Error         4 2.672542E+12 668135587840
Total         5 3.625954E+13
```

```
The regression equation is
OG3OTOTL = -1.18E+08 + 1427136 FY

Predictor       Coef       Stdev    t-ratio
Constant  -118447648     8028701     -14.75
FY           1427136       93884      15.20

s = 392746      R-sq = 98.3%     R-sq(adj) = 97.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 3.564256E+13 3.564256E+13
Error         4 616997519360 154249330688
Total         5 3.625954E+13
```

```
The regression equation is
OG3OTOTL = -45984032 + 0.0674 Inv-Cost

Predictor        Coef           Stdev     t-ratio
Constant    -45984032        14016479       -3.28
Inv-Cost      0.06744         0.01906        3.54

s = 1481349     R-sq = 75.8%     R-sq(adj) = 69.7%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 2.748197E+13 2.748197E+13
Error          4 8.777586E+12 2.194396E+12
Total          5 3.625954E+13


The regression equation is
OG3OTOTL = -24842496 + 2933 DAFHP + 0.0354 Inv-Cost

Predictor        Coef           Stdev     t-ratio
Constant    -24842496        21210320       -1.17
DAFHP            2933            2318        1.27
Inv-Cost      0.03537         0.03095        1.14

s = 1381145     R-sq = 84.2%     R-sq(adj) = 73.7%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 3.053688E+13 1.526844E+13
Error          3 5.722685E+12 1.907561E+12
Total          5 3.625956E+13

SOURCE        DF        SEQ SS
DAFHP          1 2.804498E+13
Inv-Cost       1 2.491902E+12
```

```
The regression equation is
OG30TOTL = -24842496 + 0.0354 Inv-Cost + 2933 DAFHP

Predictor       Coef          Stdev     t-ratio
Constant   -24842496       21210320       -1.17
Inv-Cost     0.03537        0.03095        1.14
DAFHP           2933           2318        1.27

s = 1381145     R-sq = 84.2%     R-sq(adj) = 73.7%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 3.053688E+13 1.526844E+13
Error         3 5.722685E+12 1.907561E+12
Total         5 3.625956E+13

SOURCE       DF       SEQ SS
Inv-Cost      1 2.748197E+13
DAFHP         1 3.054899E+12


The regression equation is
OG30TOTL = - 5166854 + 5900 Days-U/W + 0.00770 Inv-Cost

Predictor       Coef          Stdev     t-ratio
Constant    -5166854        6290593       -0.82
Days-U/W      5900.4          755.3        7.81
Inv-Cost    0.007696       0.009009        0.85

s = 370249      R-sq = 98.9%     R-sq(adj) = 98.1%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 3.584831E+13 1.792416E+13
Error         3 411254063104 137084665856
Total         5 3.625956E+13

SOURCE       DF       SEQ SS
Days-U/W      1 3.574827E+13
Inv-Cost      1 100033822720
```

```
The regression equation is
OG3OTOTL = - 5166854 + 0.00770 Inv-Cost + 5900 Days-U/W

Predictor        Coef          Stdev     t-ratio
Constant     -5166854        6290593       -0.82
Inv-Cost     0.007696       0.009009        0.85
Days-U/W       5900.4          755.3        7.81

s = 370249       R-sq = 98.9%     R-sq(adj) = 98.1%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 3.584831E+13 1.792416E+13
Error          3 411254063104 137084665856
Total          5 3.625956E+13

SOURCE        DF        SEQ SS
Inv-Cost       1 2.748197E+13
Days-U/W       1 8.366331E+12


The regression equation is
OG3OTOTL = - 9528210 + 13531 Missions + 0.0143 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant     -9528210        6064684       -1.57
Missions        13531           1801        7.51
Inv-Cost     0.014270       0.008634        1.65

s = 384341       R-sq = 98.8%     R-sq(adj) = 98.0%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 3.581640E+13 1.790820E+13
Error          3 443153514496 147717816320
Total          5 3.625956E+13

SOURCE        DF        SEQ SS
Missions       1 3.541284E+13
Inv-Cost       1 403572654080
```

```
The regression equation is
OG3OTOTL = - 9528210 + 0.0143 Inv-Cost + 13531 Missions

Predictor        Coef          Stdev     t-ratio
Constant     -9528210        6064685       -1.57
Inv-Cost     0.014270       0.008634        1.65
Missions        13531           1801        7.51

s = 384341       R-sq = 98.8%     R-sq(adj) = 98.0%

Analysis of Variance
SOURCE        DF            SS             MS
Regression     2 3.581640E+13 1.790820E+13
Error          3 443153514496 147717816320
Total          5 3.625956E+13

SOURCE        DF        SEQ SS
Inv-Cost       1 2.748197E+13
Missions       1 8.334431E+12


The regression equation is
OG3OTOTL = - 6241345 + 285 Res-Hrs + 0.00947 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant     -6241345        5237603       -1.19
Res-Hrs        285.44          30.91        9.23
Inv-Cost     0.009468       0.007475        1.27

s = 315378       R-sq = 99.2%     R-sq(adj) = 98.6%

Analysis of Variance
SOURCE        DF            SS             MS
Regression     2 3.596117E+13 1.798058E+13
Error          3 298389340160  99463069696
Total          5 3.625956E+13

SOURCE        DF        SEQ SS
Res-Hrs        1 3.580161E+13
Inv-Cost       1 159566069760
```

```
The regression equation is
OG3OTOTL = - 6241345 + 0.00947 Inv-Cost + 285 Res-Hrs

Predictor        Coef          Stdev     t-ratio
Constant     -6241345        5237603       -1.19
Inv-Cost     0.009468       0.007475        1.27
Res-Hrs        285.44          30.91        9.23

s = 315378      R-sq = 99.2%     R-sq(adj) = 98.6%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 3.596117E+13 1.798058E+13
Error          3 298389340160  99463069696
Total          5 3.625956E+13

SOURCE        DF        SEQ SS
Inv-Cost       1 2.748197E+13
Res-Hrs        1 8.479196E+12


The regression equation is
OG3OTOTL = - 7539548 + 4191 DaysAFO + 0.0112 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant     -7539548       11944160       -0.63
DaysAFO          4191           1084        3.87
Inv-Cost      0.01125        0.01709        0.66

s = 699334      R-sq = 96.0%     R-sq(adj) = 93.3%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 3.479236E+13 1.739618E+13
Error          3 1.467203E+12 489067708416
Total          5 3.625956E+13

SOURCE        DF        SEQ SS
DaysAFO        1 3.458063E+13
Inv-Cost       1 211730694144
```

```
The regression equation is
OG30TOTL = - 7539548 + 0.0112 Inv-Cost + 4191 DaysAFO

Predictor        Coef          Stdev     t-ratio
Constant     -7539548       11944160       -0.63
Inv-Cost      0.01125        0.01709        0.66
DaysAFO          4191           1084        3.87

s = 699334      R-sq = 96.0%     R-sq(adj) = 93.3%

Analysis of Variance
SOURCE       DF           SS             MS
Regression    2 3.479236E+13 1.739618E+13
Error         3 1.467203E+12 489067708416
Total         5 3.625956E+13

SOURCE       DF       SEQ SS
Inv-Cost      1 2.748197E+13
DaysAFO       1 7.310381E+12


The regression equation is
OG30TOTL = 5445414 + 951008 Avg-No - 0.0089 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant      5445414       21188400        0.26
Avg-No         951008         356325        2.67
Inv-Cost     -0.00889        0.03101       -0.29

s = 931170      R-sq = 92.8%     R-sq(adj) = 88.0%

Analysis of Variance
SOURCE       DF           SS             MS
Regression    2 3.365833E+13 1.682917E+13
Error         3 2.601230E+12 867076538368
Total         5 3.625956E+13

SOURCE       DF       SEQ SS
Avg-No        1 3.358701E+13
Inv-Cost      1  71312474112
```

```
The regression equation is
OG3OTOTL = -1.27E+08 + 1632677 FY - 0.0122 Inv-Cost

Predictor       Coef         Stdev     t-ratio
Constant  -127054160      11567512      -10.98
FY           1632677        220782        7.39
Inv-Cost    -0.01220       0.01188       -1.03

s = 390080      R-sq = 98.7%     R-sq(adj) = 97.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 3.580308E+13 1.790154E+13
Error         3 456486944768 152162271232
Total         5 3.625956E+13

SOURCE       DF       SEQ SS
FY            1 3.564256E+13
Inv-Cost      1 160510509056


The regression equation is
OG3OTOTL = -1.27E+08 - 0.0122 Inv-Cost + 1632677 FY

Predictor       Coef         Stdev     t-ratio
Constant  -127054160      11567512      -10.98
Inv-Cost    -0.01220       0.01188       -1.03
FY           1632677        220782        7.39

s = 390080      R-sq = 98.7%     R-sq(adj) = 97.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 3.580308E+13 1.790154E+13
Error         3 456486944768 152162271232
Total         5 3.625956E+13

SOURCE       DF       SEQ SS
Inv-Cost      1 2.748197E+13
FY            1 8.321099E+12
```

K. ANALYSIS OF OG-42 COSTS FOR THE 270 WMEC.

```
                      DAYS         RES  DAYS   AVG
          OG42 DAFHP   U/W  MSNS   HRS   AFO    NO    FY
DAFHP    0.241
Days-U/W 0.518 0.922
Missions 0.610 0.883 0.990
Res-Hrs  0.545 0.907 0.999 0.995
DaysAFO  0.440 0.956 0.994 0.975 0.990
Avg-No   0.425 0.959 0.973 0.940 0.963 0.983
FY       0.540 0.923 0.991 0.976 0.987 0.985 0.988
Inv-Cost 0.526 0.819 0.849 0.820 0.840 0.850 0.922 0.906


The regression equation is
OG42 = 103931 + 149 DAFHP

Predictor       Coef         Stdev     t-ratio
Constant      103931        278833        0.37
DAFHP          148.9         300.4        0.50

s = 311782      R-sq = 5.8%      R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF          SS            MS
Regression    1  23889977344  23889977344
Error         4 388831379456  97207844864
Total         5 412721348608


The regression equation is
OG42 = 39402 + 359 Days-U/W

Predictor       Coef         Stdev     t-ratio
Constant       39402        191255        0.21
Days-U/W       358.8         296.4        1.21

s = 274797      R-sq = 26.8%     R-sq(adj) = 8.5%

Analysis of Variance
SOURCE       DF          SS            MS
Regression    1 110667628544 110667628544
Error         4 302053654528  75513397248
Total         5 412721283072
```

```
The regression equation is
OG42 = 23856 + 1051 Missions

Predictor       Coef         Stdev     t-ratio
Constant       23856        168017        0.14
Missions      1051.2         683.4        1.54

s = 254614      R-sq = 37.2%     R-sq(adj) = 21.5%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 153408897024 153408897024
Error         4 259312386048  64828096512
Total         5 412721283072


The regression equation is
OG42 = 40585 + 18.6 Res-Hrs

Predictor       Coef         Stdev     t-ratio
Constant       40585        180703        0.22
Res-Hrs        18.62         14.33        1.30

s = 269355      R-sq = 29.7%     R-sq(adj) = 12.1%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 122512146432 122512146432
Error         4 290209136640  72552284160
Total         5 412721283072


The regression equation is
OG42 = 70393 + 230 DaysAFO

Predictor       Coef         Stdev     t-ratio
Constant       70393        198620        0.35
DaysAFO        230.4         235.4        0.98

s = 288521      R-sq = 19.3%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1  79743549440  79743549440
Error         4 332977799168  83244417024
Total         5 412721348608
```

```
The regression equation is
OG42 = 29054 + 40367 Avg-No

Predictor        Coef          Stdev      t-ratio
Constant        29054         241828         0.12
Avg-No          40367          42983         0.94

s = 290758      R-sq = 18.1%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1   74560503808   74560503808
Error         4  338160844800   84540194816
Total         5  412721348608


The regression equation is
OG42 = - 6867988 + 82981 FY

Predictor        Coef          Stdev      t-ratio
Constant     -6867988        5525315        -1.24
FY              82981          64611         1.28

s = 270286      R-sq = 29.2%     R-sq(adj) = 11.5%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1  120503336960  120503336960
Error         4  292217946112   73054486528
Total         5  412721283072


The regression equation is
OG42 = - 2970389 + 0.00435 Inv-Cost

Predictor        Coef          Stdev      t-ratio
Constant     -2970389        2584018        -1.15
Inv-Cost     0.004351       0.003513         1.24

s = 273095      R-sq = 27.7%     R-sq(adj) = 9.6%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1  114397085696  114397085696
Error         4  298324197376   74581016576
Total         5  412721283072
```

```
The regression equation is
OG42 = - 447770 + 936 Missions + 0.00067 Inv-Cost

Predictor       Coef          Stdev     t-ratio
Constant     -447770        4631184       -0.10
Missions         936           1376        0.68
Inv-Cost    0.000672       0.006593        0.10

s = 293495      R-sq = 37.4%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 154303791104  77151862784
Error         3 258417491968  86139142144
Total         5 412721283072

SOURCE       DF       SEQ SS
Missions      1 153408897024
Inv-Cost      1    894891520


The regression equation is
OG42 = - 447770 + 0.00067 Inv-Cost + 936 Missions

Predictor       Coef          Stdev     t-ratio
Constant     -447770        4631184       -0.10
Inv-Cost    0.000672       0.006593        0.10
Missions         936           1376        0.68

s = 293495      R-sq = 37.4%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 154303791104  77151862784
Error         3 258417491968  86139142144
Total         5 412721283072

SOURCE       DF       SEQ SS
Inv-Cost      1 114397085696
Missions      1  39906709504
```

```
The regression equation is
OG42 = - 1312188 + 11.9 Res-Hrs + 0.00193 Inv-Cost

Predictor       Coef         Stdev     t-ratio
Constant    -1312188       5105825       -0.26
Res-Hrs        11.91         30.14        0.40
Inv-Cost    0.001932      0.007287        0.27

s = 307443      R-sq = 31.3%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 129158086656  64579043328
Error         3 283563196416  94521065472
Total         5 412721283072

SOURCE       DF       SEQ SS
Res-Hrs       1 122512146432
Inv-Cost      1   6645919744
```

```
The regression equation is
OG42 = - 1312188 + 0.00193 Inv-Cost + 11.9 Res-Hrs

Predictor       Coef         Stdev     t-ratio
Constant    -1312188       5105825       -0.26
Inv-Cost    0.001932      0.007287        0.27
Res-Hrs        11.91         30.14        0.40

s = 307443      R-sq = 31.3%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 129158086656  64579043328
Error         3 283563196416  94521065472
Total         5 412721283072

SOURCE       DF       SEQ SS
Inv-Cost      1 114397085696
Res-Hrs       1  14760972288
```

```
The regression equation is
OG42 = - 5669102 + 54350 FY + 0.00170 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant     -5669102        9205604       -0.62
FY              54350         175702        0.31
Inv-Cost     0.001700       0.009455        0.18

s = 310432       R-sq = 30.0%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE          DF            SS              MS
Regression       2  123618000896     61809000448
Error            3  289103347712     96367738880
Total            5  412721348608

SOURCE          DF        SEQ SS
FY               1  120503336960
Inv-Cost         1    3114625536


The regression equation is
OG42 = - 5669102 + 0.00170 Inv-Cost + 54350 FY

Predictor        Coef          Stdev     t-ratio
Constant     -5669102        9205604       -0.62
Inv-Cost     0.001700       0.009455        0.18
FY              54350         175702        0.31

s = 310432       R-sq = 30.0%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE          DF            SS              MS
Regression       2  123618000896     61809000448
Error            3  289103347712     96367738880
Total            5  412721348608

SOURCE          DF        SEQ SS
Inv-Cost         1  114397085696
FY               1    9220874240
```

```
The regression equation is
OG42 = - 1753956 + 176 Days-U/W + 0.00257 Inv-Cost

Predictor       Coef         Stdev     t-ratio
Constant    -1753956       5290583       -0.33
Days-U/W       175.8         635.2        0.28
Inv-Cost    0.002570      0.007577        0.34

s = 311391      R-sq = 29.5%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 121827753984  60913876992
Error         3 290893529088  96964509696
Total         5 412721283072

SOURCE       DF       SEQ SS
Days-U/W      1 110667628544
Inv-Cost      1  11160113152


The regression equation is
OG42 = - 1753956 + 0.00257 Inv-Cost + 176 Days-U/W

Predictor       Coef         Stdev     t-ratio
Constant    -1753956       5290583       -0.33
Inv-Cost    0.002570      0.007577        0.34
Days-U/W       175.8         635.2        0.28

s = 311391      R-sq = 29.5%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 121827753984  60913876992
Error         3 290893529088  96964509696
Total         5 412721283072

SOURCE       DF       SEQ SS
Inv-Cost      1 114397085696
Days-U/W      1   7430635520
```

```
The regression equation is
OG42 = - 5548586 + 0.00826 Inv-Cost - 358 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant     -5548586        4458776       -1.24
Inv-Cost     0.008261       0.006505        1.27
DAFHP          -357.7          487.3       -0.73

s = 290340       R-sq = 38.7%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE        DF            SS             MS
Regression     2  159828541440    79914270720
Error          3  252892807168    84297580544
Total          5  412721348608

SOURCE        DF        SEQ SS
Inv-Cost       1  114397085696
DAFHP          1   45431406592


The regression equation is
OG42 = - 5548586 - 358 DAFHP + 0.00826 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant     -5548586        4458776       -1.24
DAFHP          -357.7          487.3       -0.73
Inv-Cost     0.008261       0.006505        1.27

s = 290340       R-sq = 38.7%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE        DF            SS             MS
Regression     2  159828541440    79914270720
Error          3  252892807168    84297580544
Total          5  412721348608

SOURCE        DF        SEQ SS
DAFHP          1   23889977344
Inv-Cost       1  135938506752
```

L. ANALYSIS OF OG-45 COSTS FOR THE 270 WMEC.

```
                           DAYS              RES   DAYS    AVG
           OG45  DAFHP      U/W   MSNS       HRS    AFO     NO      FY
DAFHP     0.768
Days-U/W 0.923 0.922
Missions 0.952 0.883 0.990
Res-Hrs  0.934 0.907 0.999 0.995
DaysAFO  0.892 0.956 0.994 0.975 0.990
Avg-No   0.884 0.959 0.973 0.940 0.963 0.983
FY       0.935 0.923 0.991 0.976 0.987 0.985 0.988
Inv-Cost 0.874 0.819 0.849 0.820 0.840 0.850 0.922 0.906
```

```
The regression equation is
OG45 = - 126189 + 1160 DAFHP

Predictor        Coef          Stdev      t-ratio
Constant      -126189         448421        -0.28
DAFHP          1159.8          483.1         2.40

s = 501409       R-sq = 59.0%     R-sq(adj) = 48.8%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 1.449045E+12 1.449045E+12
Error          4 1.005644E+12 251410841600
Total          5 2.454688E+12
```

```
The regression equation is
OG45 = 16379 + 1560 Days-U/W

Predictor        Coef          Stdev      t-ratio
Constant        16379         209595         0.08
Days-U/W       1559.8          324.8         4.80

s = 301149       R-sq = 85.2%     R-sq(adj) = 81.5%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 2.091927E+12 2.091927E+12
Error          4 362762207232  90690551808
Total          5 2.454689E+12
```

```
The regression equation is
OG45 = 58290 + 4004 Missions

Predictor        Coef          Stdev     t-ratio
Constant        58290         158090        0.37
Missions       4003.6          643.0        6.23

s = 239570      R-sq = 90.6%     R-sq(adj) = 88.3%

Analysis of Variance
SOURCE       DF           SS              MS
Regression    1 2.225114E+12 2.225114E+12
Error         4 229574574080  57393643520
Total         5 2.454688E+12


The regression equation is
OG45 = 52707 + 77.8 Res-Hrs

Predictor        Coef          Stdev     t-ratio
Constant        52707         187883        0.28
Res-Hrs         77.84          14.90        5.22

s = 280058      R-sq = 87.2%     R-sq(adj) = 84.0%

Analysis of Variance
SOURCE       DF           SS              MS
Regression    1 2.140959E+12 2.140959E+12
Error         4 313729482752  78432370688
Total         5 2.454688E+12
```

```
The regression equation is
OG45 = 52707 + 77.8 Res-Hrs

Predictor        Coef          Stdev     t-ratio
Constant        52707         187883        0.28
Res-Hrs         77.84          14.90        5.22

s = 280058      R-sq = 87.2%     R-sq(adj) = 84.0%

Analysis of Variance
SOURCE       DF           SS              MS
Regression    1 2.140959E+12 2.140959E+12
Error         4 313729482752  78432370688
Total         5 2.454688E+12
```

```
The regression equation is
OG45 = 56739 + 1140 DaysAFO

Predictor       Coef         Stdev     t-ratio
Constant       56739        243441        0.23
DaysAFO       1140.4         288.5        3.95

s = 353630      R-sq = 79.6%     R-sq(adj) = 74.5%

Analysis of Variance
SOURCE       DF           SS          MS
Regression    1 1.954472E+12 1.954472E+12
Error         4 500216823808 125054156800
Total         5 2.454688E+12


The regression equation is
OG45 = - 171733 + 204702 Avg-No

Predictor       Coef         Stdev     t-ratio
Constant     -171733        304832       -0.56
Avg-No        204702         54182        3.78

s = 366511      R-sq = 78.1%     R-sq(adj) = 72.6%

Analysis of Variance
SOURCE       DF           SS          MS
Regression    1 1.917368E+12 1.917368E+12
Error         4 537320554496 134330122240
Total         5 2.454688E+12


The regression equation is
OG45 = -29093792 + 350005 FY

Predictor       Coef         Stdev     t-ratio
Constant   -29093792       5698962       -5.11
FY            350005         66641        5.25

s = 278780      R-sq = 87.3%     R-sq(adj) = 84.2%

Analysis of Variance
SOURCE       DF           SS          MS
Regression    1 2.143815E+12 2.143815E+12
Error         4 310874013696  77718487040
Total         5 2.454688E+12
```

```
The regression equation is
OG45 = -12119396 + 0.0176 Inv-Cost

Predictor        Coef         Stdev     t-ratio
Constant    -12119396       3595939       -3.37
Inv-Cost     0.017623      0.004889        3.60

s = 380041      R-sq = 76.5%     R-sq(adj) = 70.6%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 1.876963E+12 1.876963E+12
Error          4 577726054400 144431513600
Total          5 2.454688E+12


The regression equation is
OG45 = - 3992603 + 3016 Missions + 0.00577 Inv-Cost

Predictor        Coef         Stdev     t-ratio
Constant     -3992603       3684359       -1.08
Missions         3016          1094        2.76
Inv-Cost     0.005772      0.005245        1.10

s = 233491      R-sq = 93.3%     R-sq(adj) = 88.9%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 2.291134E+12 1.145567E+12
Error          3 163554197504  54518063104
Total          5 2.454688E+12

SOURCE        DF        SEQ SS
Missions       1 2.225114E+12
Inv-Cost       1  66020388864
```

```
The regression equation is
OG45 = - 3992603 + 0.00577 Inv-Cost + 3016 Missions

Predictor       Coef         Stdev     t-ratio
Constant    -3992603       3684359       -1.08
Inv-Cost    0.005772      0.005245        1.10
Missions        3016          1094        2.76

s = 233491      R-sq = 93.3%     R-sq(adj) = 88.9%

Analysis of Variance
SOURCE       DF          SS            MS
Regression    2 2.291134E+12 1.145567E+12
Error         3 163554197504  54518063104
Total         5 2.454688E+12

SOURCE       DF      SEQ SS
Inv-Cost      1 1.876963E+12
Missions      1 414171791360


The regression equation is
OG45 = -26914624 + 297962 FY + 0.00309 Inv-Cost

Predictor       Coef         Stdev     t-ratio
Constant   -26914624       9386602       -2.87
FY            297962        179156        1.66
Inv-Cost    0.003090      0.009641        0.32

s = 316535      R-sq = 87.8%     R-sq(adj) = 79.6%

Analysis of Variance
SOURCE       DF          SS            MS
Regression    2 2.154105E+12 1.077053E+12
Error         3 300583616512 100194516992
Total         5 2.454688E+12

SOURCE       DF      SEQ SS
FY            1 2.143815E+12
Inv-Cost      1  10290388992
```

```
The regression equation is
OG45 = -26914624 + 0.00309 Inv-Cost + 297962 FY

Predictor       Coef         Stdev    t-ratio
Constant   -26914624       9386602      -2.87
Inv-Cost    0.003090      0.009641       0.32
FY            297962        179156       1.66

s = 316535      R-sq = 87.8%     R-sq(adj) = 79.6%

Analysis of Variance
SOURCE       DF          SS           MS
Regression    2 2.154105E+12 1.077053E+12
Error         3 300583616512 100194516992
Total         5 2.454688E+12

SOURCE       DF       SEQ SS
Inv-Cost      1 1.876963E+12
FY            1 277142372352


The regression equation is
OG45 = - 4260515 + 56.4 Res-Hrs + 0.00616 Inv-Cost

Predictor       Coef         Stdev    t-ratio
Constant    -4260515       4757243      -0.90
Res-Hrs        56.44         28.08       2.01
Inv-Cost    0.006161      0.006789       0.91

s = 286453      R-sq = 90.0%     R-sq(adj) = 83.3%

Analysis of Variance
SOURCE       DF          SS           MS
Regression    2 2.208522E+12 1.104261E+12
Error         3 246166454272  82055462912
Total         5 2.454688E+12

SOURCE       DF       SEQ SS
Res-Hrs       1 2.140959E+12
Inv-Cost      1  67563028480
```

```
The regression equation is
OG45 = - 4260515 + 0.00616 Inv-Cost + 56.4 Res-Hrs

Predictor       Coef         Stdev     t-ratio
Constant    -4260515       4757243       -0.90
Inv-Cost    0.006161      0.006789        0.91
Res-Hrs        56.44         28.08        2.01

s = 286453      R-sq = 90.0%     R-sq(adj) = 83.3%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 2.208522E+12 1.104261E+12
Error         3 246166454272  82055462912
Total         5 2.454688E+12

SOURCE       DF       SEQ SS
Inv-Cost      1 1.876963E+12
Res-Hrs       1 331559534592


The regression equation is
OG45 = - 4553718 + 1094 Days-U/W + 0.00655 Inv-Cost

Predictor       Coef         Stdev     t-ratio
Constant    -4553718       5285070       -0.86
Days-U/W      1093.7         634.6        1.72
Inv-Cost    0.006550      0.007569        0.87

s = 311067      R-sq = 88.2%     R-sq(adj) = 80.3%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    2 2.164401E+12 1.082201E+12
Error         3 290287648768  96762527744
Total         5 2.454688E+12

SOURCE       DF       SEQ SS
Days-U/W      1 2.091927E+12
Inv-Cost      1  72474558464
```

```
The regression equation is
OG45 = - 4553718 + 0.00655 Inv-Cost + 1094 Days-U/W

Predictor        Coef          Stdev     t-ratio
Constant     -4553718        5285070       -0.86
Inv-Cost     0.006550       0.007569        0.87
Days-U/W       1093.7          634.6        1.72

s = 311067      R-sq = 88.2%     R-sq(adj) = 80.3%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 2.164401E+12 1.082201E+12
Error          3 290287648768  96762527744
Total          5 2.454688E+12

SOURCE        DF        SEQ SS
Inv-Cost       1 1.876963E+12
Days-U/W       1 287438340096


The regression equation is
OG45 = - 5821764 + 686 DaysAFO + 0.00842 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant     -5821764        6091036       -0.96
DaysAFO         686.5          552.7        1.24
Inv-Cost     0.008419       0.008716        0.97

s = 356632      R-sq = 84.5%     R-sq(adj) = 74.1%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     2 2.073130E+12 1.036565E+12
Error          3 381558784000 127186239488
Total          5 2.454688E+12

SOURCE        DF        SEQ SS
DaysAFO        1 1.954472E+12
Inv-Cost       1 118658039808
```

```
The regression equation is
OG45 = - 5821764 + 0.00842 Inv-Cost + 686 DaysAFO

Predictor        Coef          Stdev     t-ratio
Constant     -5821764        6091036       -0.96
Inv-Cost     0.008419       0.008716        0.97
DaysAFO         686.5          552.7        1.24

s = 356632      R-sq = 84.5%     R-sq(adj) = 74.1%

Analysis of Variance
SOURCE        DF           SS            MS
Regression     2 2.073130E+12 1.036565E+12
Error          3 381558784000 127186239488
Total          5 2.454688E+12

SOURCE        DF       SEQ SS
Inv-Cost       1 1.876963E+12
DaysAFO        1 196167204864
```

```
The regression equation is
OG45 = - 5636118 + 119885 Avg-No + 0.0080 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant     -5636118        9097811       -0.62
Avg-No         119885         152998        0.78
Inv-Cost      0.00800        0.01331        0.60

s = 399823      R-sq = 80.5%     R-sq(adj) = 67.4%

Analysis of Variance
SOURCE        DF           SS            MS
Regression     2 1.975115E+12 987557265408
Error          3 479574294528 159858098176
Total          5 2.454688E+12

SOURCE        DF       SEQ SS
Avg-No         1 1.917368E+12
Inv-Cost       1  57746239488
```

```
The regression equation is
OG45 = - 5636118 + 0.0080 Inv-Cost + 119885 Avg-No

Predictor        Coef          Stdev     t-ratio
Constant     -5636118        9097809       -0.62
Inv-Cost      0.00800        0.01331        0.60
Avg-No         119885         152998        0.78

s = 399823       R-sq = 80.5%     R-sq(adj) = 67.4%

Analysis of Variance
SOURCE        DF            SS              MS
Regression     2 1.975115E+12 987557265408
Error          3 479574294528 159858098176
Total          5 2.454688E+12

SOURCE        DF        SEQ SS
Inv-Cost       1 1.876963E+12
Avg-No         1  98151694336


The regression equation is
OG45 = -10391394 + 240 DAFHP + 0.0150 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant    -10391394        6619097       -1.57
DAFHP           239.8          723.4        0.33
Inv-Cost     0.015003       0.009657        1.55

s = 431013       R-sq = 77.3%     R-sq(adj) = 62.2%

Analysis of Variance
SOURCE        DF            SS              MS
Regression     2 1.897371E+12 948685504512
Error          3 557317488640 185772474368
Total          5 2.454688E+12

SOURCE        DF        SEQ SS
DAFHP          1 1.449045E+12
Inv-Cost       1 448326074368
```

```
The regression equation is
OG45 = -10391394 + 0.0150 Inv-Cost + 240 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant    -10391394        6619097       -1.57
Inv-Cost     0.015003       0.009657        1.55
DAFHP           239.8          723.4        0.33

s = 431013        R-sq = 77.3%     R-sq(adj) = 62.2%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    2 1.897371E+12 948685504512
Error         3 557317488640 185772474368
Total         5 2.454688E+12

SOURCE       DF       SEQ SS
Inv-Cost      1 1.876963E+12
DAFHP         1  20408557568
```

M. ANALYSIS OF TOTAL OE COSTS FOR THE 110 WPB.

```
                               DAYS   RES   DAYS  AVG
       TOTALOE   FY  DAFHP     U/W    HRS    AFO   NO    MSNS
FY       0.927
DAFHP    0.993 0.966
DAYS-U/W 1.000 0.933 0.994
RES-HRS  0.999 0.911 0.987 0.998
DAYSAFO  0.988 0.973 1.000 0.991 0.981
AVG-NO   0.979 0.985 0.996 0.982 0.969 0.998
MISSIONS 0.941 0.999 0.975 0.946 0.926 0.981 0.990
INV-COST 0.927 1.000 0.966 0.933 0.911 0.973 0.985 0.999
```

```
The regression equation is
TotalOE = -1.07E+08 + 1247656 FY

Predictor        Coef          Stdev     t-ratio
Constant   -106683184       43847072       -2.43
FY            1247656         503967        2.48

s = 712717        R-sq = 86.0%     R-sq(adj) = 71.9%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    1 3.113290E+12 3.113290E+12
Error         1 507966062592 507966062592
Total         2 3.621256E+12
```

```
The regression equation is
TotalOE = - 561725 + 1540 DAFHP

Predictor       Coef         Stdev     t-ratio
Constant     -561725        326529       -1.72
DAFHP         1540.4         189.2        8.14

s = 231983      R-sq = 98.5%     R-sq(adj) = 97.0%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1 3.567440E+12 3.567440E+12
Error         1   53816225792  53816225792
Total         2 3.621256E+12


The regression equation is
TotalOE = - 411996 + 1545 Days-U/W

Predictor       Coef         Stdev     t-ratio
Constant     -411996         41869       -9.84
Days-U/W     1545.43         25.61       60.34

s = 31535       R-sq = 100.0%    R-sq(adj) = 99.9%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1 3.620262E+12 3.620262E+12
Error         1     994428928    994428928
Total         2 3.621256E+12


The regression equation is
TotalOE = - 438030 + 94.8 Res-Hrs

Predictor       Coef         Stdev     t-ratio
Constant     -438030        106701       -4.11
Res-Hrs       94.824         3.969       23.89

s = 79578       R-sq = 99.8%     R-sq(adj) = 99.7%

Analysis of Variance
SOURCE       DF            SS            MS
Regression    1 3.614924E+12 3.614924E+12
Error         1    6332592128   6332592128
Total         2 3.621256E+12

Unusual Observations
Obs. Res-Hrs  TotalOE     Fit  Stdev.Fit  Residual   St.Resid
 1      7972   324258  317908      79324      6349     1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
TotalOE = - 140598 + 860 DaysAFO

Predictor       Coef         Stdev     t-ratio
Constant     -140598        348705       -0.40
DaysAFO        860.1         131.6        6.54

s = 287831      R-sq = 97.7%     R-sq(adj) = 95.4%

Analysis of Variance
SOURCE        DF           SS            MS
Regression     1 3.538410E+12 3.538410E+12
Error          1  82846547968  82846547968
Total          2 3.621256E+12

The regression equation is
TotalOE = - 211308 + 176127 Avg-No

Predictor       Coef         Stdev     t-ratio
Constant     -211308        492261       -0.43
Avg-No        176127         37111        4.75

s = 392351      R-sq = 95.7%     R-sq(adj) = 91.5%

Analysis of Variance
SOURCE        DF           SS            MS
Regression     1 3.467317E+12 3.467317E+12
Error          1 153939279872 153939279872
Total          2 3.621255E+12


The regression equation is
TotalOE = 168719 + 1521 missions

Predictor       Coef         Stdev     t-ratio
Constant      168719        715579        0.24
missions      1521.2         548.5        2.77

s = 645485      R-sq = 88.5%     R-sq(adj) = 77.0%

Analysis of Variance
SOURCE        DF           SS            MS
Regression     1 3.204606E+12 3.204606E+12
Error          1 416650952704 416650952704
Total          2 3.621256E+12
```

```
The regression equation is
TotalOE = - 988905 + 0.0255 Inv-Cost

Predictor       Coef           Stdev     t-ratio
Constant     -988905        1223214         -0.81
Inv-Cost     0.02546        0.01029          2.48

s = 712717      R-sq = 86.0%     R-sq(adj) = 71.9%

Analysis of Variance
SOURCE       DF          SS           MS
Regression    1 3.113290E+12 3.113290E+12
Error         1 507966062592 507966062592
Total         2 3.621256E+12
```

N. ANALYSIS OF OG-30 COSTS FOR THE 110 WPB.

```
                              DAYS   RES  DAYS   AVG
       OG30TOTL   FY   DAFHP  U/W   HRS   AFO    NO  MSNS
FY        0.782
DAFHP     0.917 0.966
DAYS-U/W  0.954 0.933 0.994
RES-HRS   0.970 0.911 0.987 0.998
DAYSAFO   0.905 0.973 1.000 0.991 0.981
AVG-NO    0.880 0.985 0.996 0.982 0.969 0.998
MISSIONS  0.805 0.999 0.975 0.946 0.926 0.981 0.990
INV-COST  0.782 1.000 0.966 0.933 0.911 0.973 0.985 0.999


The regression equation is
OG30TOTL = -70111440 + 823339 FY

Predictor       Coef           Stdev     t-ratio
Constant   -70111440       57003440         -1.23
FY            823339         655183          1.26

s = 926569      R-sq = 61.2%     R-sq(adj) = 22.5%

Analysis of Variance
SOURCE       DF          SS           MS
Regression    1 1.355775E+12 1.355775E+12
Error         1 858529857536 858529857536
Total         2 2.214304E+12
```

```
The regression equation is
OG30TOTL = - 232440 + 1113 DAFHP

Predictor       Coef         Stdev     t-ratio
Constant     -232440        835801       -0.28
DAFHP         1112.8         484.3        2.30

s = 593796      R-sq = 84.1%     R-sq(adj) = 68.2%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 1.861711E+12 1.861711E+12
Error         1 352593772544 352593772544
Total         2 2.214304E+12
```

```
The regression equation is
OG30TOTL = - 178007 + 1153 Days-U/W

Predictor       Coef         Stdev     t-ratio
Constant     -178007        592975       -0.30
Days-U/W      1152.9         362.8        3.18

s = 446616      R-sq = 91.0%     R-sq(adj) = 82.0%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 2.014840E+12 2.014840E+12
Error         1 199465828352 199465828352
Total         2 2.214305E+12
```

```
The regression equation is
OG30TOTL = - 227315 + 72.0 Res-Hrs

Predictor       Coef         Stdev     t-ratio
Constant     -227315        486731       -0.47
Res-Hrs        71.97         18.10        3.98

s = 363003      R-sq = 94.0%     R-sq(adj) = 88.1%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1 2.082534E+12 2.082534E+12
Error         1 131771006976 131771006976
Total         2 2.214304E+12

Unusual Observations
Obs. Res-Hrs OG30TOTL     Fit Stdev.Fit  Residual   St.Resid
 1      7972   317485  346449    361845    -28964     -1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG30TOTL = 85228 + 616 DaysAFO

Predictor        Coef          Stdev     t-ratio
Constant        85228         768031        0.11
DaysAFO         615.6          289.9        2.12

s = 633953      R-sq = 81.8%     R-sq(adj) = 63.7%

Analysis of Variance
SOURCE        DF          SS             MS
Regression     1 1.812408E+12 1.812408E+12
Error          1 401896898560 401896898560
Total          2 2.214304E+12


The regression equation is
OG30TOTL = 61224 + 123793 Avg-No

Predictor        Coef          Stdev     t-ratio
Constant        61224         888402        0.07
Avg-No         123793          66976        1.85

s = 708090      R-sq = 77.4%     R-sq(adj) = 54.7%

Analysis of Variance
SOURCE        DF          SS             MS
Regression     1 1.712913E+12 1.712913E+12
Error          1 501392015360 501392015360
Total          2 2.214304E+12


The regression equation is
OG30TOTL = 384775 + 1019 missions

Predictor        Coef          Stdev     t-ratio
Constant       384775         977639        0.39
missions       1018.5          749.4        1.36

s = 881875      R-sq = 64.9%     R-sq(adj) = 29.8%

Analysis of Variance
SOURCE        DF          SS             MS
Regression     1 1.436602E+12 1.436602E+12
Error          1 777704112128 777704112128
Total          2 2.214305E+12
```

```
The regression equation is
OG30TOTL = - 362824 + 0.0168 Inv-Cost

Predictor        Coef          Stdev     t-ratio
Constant      -362824        1590241       -0.23
Inv-Cost      0.01680        0.01337        1.26

s = 926569       R-sq = 61.2%     R-sq(adj) = 22.5%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 1.355775E+12 1.355775E+12
Error          1 858529857536 858529857536
Total          2 2.214304E+12
```

O. ANALYSIS OF OG-42 COSTS FOR THE 110 WPB.

```
                                    DAYS    RES   DAYS    AVG
             OG42    FY   DAFHP     U/W    HRS    AFO     NO   MSNS
FY          0.127
DAFHP       0.379 0.966
DAYS-U/W    0.475 0.933 0.994
RES-HRS     0.525 0.911 0.987 0.998
DAYSAFO     0.352 0.973 1.000 0.991 0.981
AVG-NO      0.299 0.985 0.996 0.982 0.969 0.998
MISSIONS    0.164 0.999 0.975 0.946 0.926 0.981 0.990
INV-COST    0.127 1.000 0.966 0.933 0.911 0.973 0.985 0.999
```

```
The regression equation is
OG42 = - 167289 + 2053 FY

Predictor        Coef          Stdev     t-ratio
Constant      -167289        1396792       -0.12
FY               2053          16054        0.13

s = 22704        R-sq = 1.6%      R-sq(adj) = 0.0%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1       8429618       8429618
Error          1     515485952     515485952
Total          2     523915520
```

```
The regression equation is
OG42 = 182 + 7.1 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant          182          29812        0.01
DAFHP            7.08          17.27        0.41

s = 21180        R-sq = 14.4%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    1     75311824      75311824
Error         1    448603904     448603904
Total         2    523915520


The regression equation is
OG42 = - 1666 + 8.8 Days-U/W

Predictor        Coef          Stdev     t-ratio
Constant        -1666          26749       -0.06
Days-U/W         8.82          16.36        0.54

s = 20147        R-sq = 22.5%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    1    118008096     118008096
Error         1    405907456     405907456
Total         2    523915520


The regression equation is
OG42 = - 3225 + 0.600 Res-Hrs

Predictor        Coef          Stdev     t-ratio
Constant        -3225          26118       -0.12
Res-Hrs        0.5995         0.9715        0.62

s = 19479        R-sq = 27.6%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS            MS
Regression    1    144494800     144494800
Error         1    379420928     379420928
Total         2    523915520

Unusual Observations
Obs. Res-Hrs    OG42       Fit  Stdev.Fit  Residual   St.Resid
 1     7972        0      1554      19417     -1554     -1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG42 = 2751 + 3.68 DaysAFO

Predictor       Coef         Stdev     t-ratio
Constant        2751         25960        0.11
DaysAFO        3.679         9.798        0.38

s = 21428       R-sq = 12.4%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1     64754592     64754592
Error         1    459161088    459161088
Total         2    523915520


The regression equation is
OG42 = 3704 + 647 Avg-No

Predictor       Coef         Stdev     t-ratio
Constant        3704         27406        0.14
Avg-No           647          2066        0.31

s = 21844       R-sq = 8.9%      R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1     46768384     46768384
Error         1    477147136    477147136
Total         2    523915520


The regression equation is
OG42 = 7764 + 3.2 missions

Predictor       Coef         Stdev     t-ratio
Constant        7764         25030        0.31
missions        3.20         19.19        0.17

s = 22578       R-sq = 2.7%      R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1     14136587     14136587
Error         1    509778944    509778944
Total         2    523915520
```

```
The regression equation is
OG42 = 6629 +0.000042 Inv-Cost

Predictor       Coef          Stdev      t-ratio
Constant        6629          38967         0.17
Inv-Cost   0.0000419      0.0003276         0.13

s = 22704       R-sq = 1.6%      R-sq(adj) = 0.0%

Analysis of Variance
SOURCE       DF          SS          MS
Regression    1     8429618     8429618
Error         1   515485952   515485952
Total         2   523915520
```

P. ANALYSIS OF OG-45 COSTS FOR THE 110 WPB.

```
                                DAYS   RES  DAYS   AVG
          OG45    FY  DAFHP    U/W   HRS   AFO    NO  MSNS
FY       0.930
DAFHP    0.803 0.966
DAYS-U/W 0.735 0.933 0.994
RES-HRS  0.695 0.911 0.987 0.998
DAYSAFO  0.820 0.973 1.000 0.991 0.981
AVG-NO   0.851 0.985 0.996 0.982 0.969 0.998
MISSIONS 0.915 0.999 0.975 0.946 0.926 0.981 0.990
INV-COST 0.930 1.000 0.966 0.933 0.911 0.973 0.985 0.999
```

```
The regression equation is
OG45 = -36404448 + 422263 FY

Predictor       Coef          Stdev      t-ratio
Constant   -36404448       14553148        -2.50
FY            422263         167270         2.52

s = 236556      R-sq = 86.4%     R-sq(adj) = 72.9%

Analysis of Variance
SOURCE       DF          SS            MS
Regression    1 356612898816 356612898816
Error         1  55958642688  55958642688
Total         2 412571533312
```

```
The regression equation is
OG45 = - 329466 + 421 DAFHP

Predictor        Coef          Stdev     t-ratio
Constant     -329466         539084       -0.61
DAFHP          420.5          312.4        1.35

s = 382993       R-sq = 64.4%     R-sq(adj) = 28.9%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 265887809536 265887809536
Error          1 146683723776 146683723776
Total          2 412571533312


The regression equation is
OG45 = - 232323 + 384 Days-U/W

Predictor        Coef          Stdev     t-ratio
Constant     -232323         577856       -0.40
Days-U/W       383.7          353.5        1.09

s = 435229       R-sq = 54.1%     R-sq(adj) = 8.2%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 223147589632 223147589632
Error          1 189423878144 189423878144
Total          2 412571467776


The regression equation is
OG45 = - 207490 + 22.3 Res-Hrs

Predictor        Coef          Stdev     t-ratio
Constant     -207490         619550       -0.33
Res-Hrs        22.25          23.04        0.97

s = 462059       R-sq = 48.3%     R-sq(adj) = 0.0%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 199072874496 199072874496
Error          1 213498593280 213498593280
Total          2 412571467776

Unusual Observations
Obs. Res-Hrs   OG45      Fit  Stdev.Fit   Residual   St.Resid
 1      7972   6773   -30094     460586      36867     1.00 X

X denotes an obs. whose X value gives it large influence.
```

```
The regression equation is
OG45 = - 228578 + 241 DaysAFO

Predictor        Coef          Stdev     t-ratio
Constant      -228578         445285       -0.51
DaysAFO         240.9          168.1        1.43

s = 367551       R-sq = 67.3%     R-sq(adj) = 34.5%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 277478113280 277478113280
Error          1 135093420032 135093420032
Total          2 412571533312
```

```
The regression equation is
OG45 = - 228578 + 241 DaysAFO

Predictor        Coef          Stdev     t-ratio
Constant      -228578         445285       -0.51
DaysAFO         240.9          168.1        1.43

s = 367551       R-sq = 67.3%     R-sq(adj) = 34.5%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 277478113280 277478113280
Error          1 135093420032 135093420032
Total          2 412571533312
```

```
The regression equation is
OG45 = - 276236 + 51687 Avg-No

Predictor        Coef          Stdev     t-ratio
Constant      -276236         423547       -0.65
Avg-No          51687          31931        1.62

s = 337583       R-sq = 72.4%     R-sq(adj) = 44.8%

Analysis of Variance
SOURCE        DF            SS            MS
Regression     1 298609147904 298609147904
Error          1 113962319872 113962319872
Total          2 412571467776
```

```
The regression equation is
OG45 = - 223820 + 500 missions

Predictor       Coef         Stdev     t-ratio
Constant     -223820        287090       -0.78
missions       499.5         220.1        2.27

s = 258968      R-sq = 83.7%     R-sq(adj) = 67.5%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 345506840576 345506840576
Error         1  67064709120  67064709120
Total         2 412571533312
```

```
The regression equation is
OG45 = - 632711 + 0.00862 Inv-Cost

Predictor       Coef         Stdev     t-ratio
Constant     -632711        405993       -1.56
Inv-Cost    0.008618      0.003414        2.52

s = 236556      R-sq = 86.4%     R-sq(adj) = 72.9%

Analysis of Variance
SOURCE       DF           SS           MS
Regression    1 356612898816 356612898816
Error         1  55958642688  55958642688
Total         2 412571533312
```

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